

MOTOR AGE

A CHILTON
PUBLICATION

APRIL 1949



In This Issue: **What Makes Hot Rods HOT?**

.. and when Piston Rings need replacing - use
the "wet" ring that controls oil and can't clog!



HASTINGS
Steel-Vent Piston Rings
"TOUGH... BUT OH SO GENTLE"
TOUGH ON OIL-PUMPING • GENTLE ON CYLINDER WALLS

HASTINGS MANUFACTURING CO. • HASTINGS, MICHIGAN

Hastings Ltd., Toronto

U.S. PAT. 2,148,997

PE

MOTOR

TRANSPARENT GLASS SEALER



FOR SEALING LEAKY
WINDSHIELDS!

Use Permatex Glass Sealer to stop leaks in windshields, windows and bodies. Always remains crystal clear, colorless and pliable. Unaffected by rain or snow, heat or cold. Adheres strongly to glass, rubber, metal, wood or plastic.

Order Through Your Local Supply House.

PERMATEX COMPANY, INC., BROOKLYN 29, N. Y.

America's No. 1 Television Show



Milton Berle and Gracie Fields in "A Piccadilly Date," a smash sketch on one of the side-splitting Texaco Star Theater television shows.

"HITS THE ROAD"

**Milton Berle Show Now
Telecast from 24 Cities...
Coast-to-coast!**



And what a record-breaking show! A recent check found 96% of the television sets turned on were tuned to the *Texaco Star Theater*. Every Tuesday night Milton Berle, master showman, and a constantly changing parade of headliners put on a terrific performance for a full hour.

At first—in 7 East coast cities. Within six months 7 mid-West cities had been added. And now—less than a year from its start, this great show has really "hit the road" in a fast expansion drive. Texaco Dealers in 24 cities and the big selling areas surrounding these cities are now enjoying the good will and the sales-building benefits of this top television show.

Such farsighted vision is typical of The Texas Company's intensive operations in backing up Texaco Dealers. For, in addition to television every Tuesday night, there's the popular coast-to-coast *Texaco Star Theater* Milton Berle radio show every Wednesday night... the Metropolitan Opera broadcasts each Saturday afternoon during the New York season... national magazine advertising... window displays... direct mail... and countless other promotional aids.

THE TEXAS COMPANY

TEXACO TELEVISION SHOW NOW SEEN IN ALL THESE CITIES! Every Tuesday Night

New York
Philadelphia
Los Angeles
Chicago
Baltimore
Boston
Detroit
Washington
Cleveland

St. Louis
Milwaukee
Schenectady
Cincinnati
Buffalo
Richmond
Toledo
Atlanta
San Francisco

New Orleans
Pittsburgh
Houston
Dallas
Fl. Worth
Seattle
Minneapolis-
St. Paul

*No wonder TEXACO DEALERS
are such busy dealers!*

**A Great Line-up for
TEXACO DEALERS**

Sky Chief and **FIRE-CHIEF** GASOLINES
HAVOLINE and TEXACO MOTOR OILS • MARFAK CHASSIS
LUBRICATION • P T ANTI-FREEZE • REGISTERED REST ROOMS



MOTOR AGE

WITH WHICH IS COMBINED AUTOMOBILE TRADE JOURNAL
for AUTOMOTIVE SERVICEMEN

Vol. LXVIII, No. 5

APRIL 1949

In This Issue . . .

Dateline Detroit	by Leonard Westrate	33
Washington Wire	by E. J. Hardy	35
West Coast Line	by R. Raymond Kay	36
Editor's Notebook	by Frank P. Tighe	37
What Makes a Hot Rod Hot?	by John Bond	38
The Pacific Regional Show		41
Sell Spring and Summer Performance	by Arthur H. Nellen, Jr.	42
Servicing Wagner Self-Adjusting Brakes	by Jack Montgomery	44
Pop Takes the Heat Off	by Charles M. Kenyon	46
Fifty Years Ago in Motor Age		48
Facing Your Way		49
Test Your Business	by Arthur Roberts	50
Servicing the Autopulse Electric Fuel Pump	by Jack Montgomery	52
News scene		54
New Products		56
Plymouth Offers Choice		59
Shop Kinks		60
Readers Clearing House		62
New Car Registrations		65
Quality Refinishing in a Hurry	by Thomas A. Dickinson	66
Flat Rate and Service Manual Department	by Andrew D. Grey	68
Engine Specifications		70
Wiring Diagrams of Packard Overdrive		178

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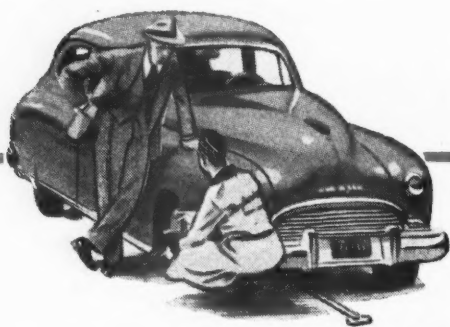
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Sell Raybestos PG Brake Lining... and be SURE on every job

Raybestos is America's Biggest Selling Brake Lining because tens of thousands of brake service shops know they can be sure when they do a reline job with Raybestos. They know that every box of Raybestos PG Lining is factory-packed with the correct combination of linings for replacement on the car specified. You can be sure with Raybestos.

Sell Raybestos—and you get the extra advantage of the Raybestos Brake Certificate Program, designed to make and hold customers for you. Featured in consistent *Saturday Evening Post* advertising, the Raybestos Brake Certificate Program points up the Raybestos Dealer as the man to see for dependable brake service.



Pull a wheel on every car and show the car owner the condition of the brake lining. Adjust or reline the brakes if necessary.



Fill in and sign the Raybestos Brake Certificate and give it to the car owner. It keeps your name before him... builds business.

Ray-BOND for bonding is also available in the same packaged combinations as PG sets.

Raybestos

AMERICA'S BIGGEST SELLING
BRAKE LINING

The Raybestos Division of RAYBESTOS-MANHATTAN, INC., Bridgeport, Conn.



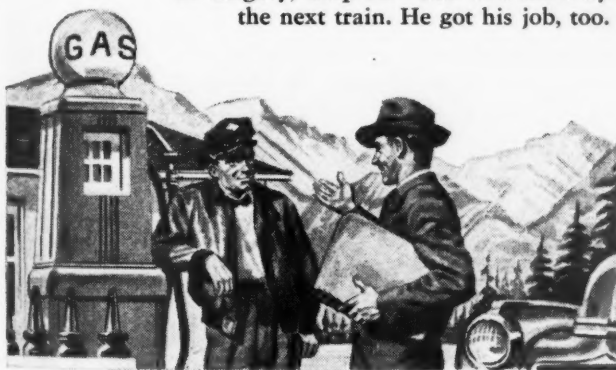
RAYBESTOS-MANHATTAN, INC., Manufacturers of Brake Linings • Brake Blocks • Clutch Facings • Radiator Hose • Fan Belts • Packings • Mechanical Rubber Products • Rubber Covered Equipment • Asbestos Textiles • Powdered Metal Products • Abrasive and Diamond Wheels • Bowling Balls

From Sea Legs to Land Legs *in one big stride . . .*

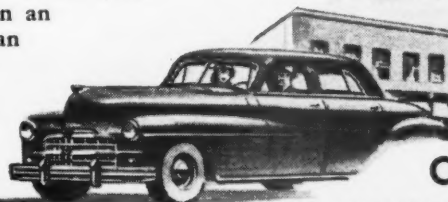
Bob did some tall thinking on his way back from the South Pacific. As a Lieut.-Commander in charge of a Carrier Aircraft Service Unit base near Guadalcanal, he was happy to have given several years to his adopted nation. Where now, with peace established, could he start afresh and capitalize on past experience? In less than two minutes' fast reading below, you'll learn the answer:



1 Life is rugged on the Manitoba farm where Bob was raised. But the land yields a good living to industrious and provident folks. Thus Bob managed two years of college before deciding on a business career. He had made a fleeting acquaintance with the branch manager of a film distributing company. During summer vacation, he wrote the man asking for a job . . . any job he had. Back came the cryptic reply, "Next time you're in Calgary, drop in." Bob was there by the next train. He got his job, too.



2 As a shipping clerk, he deliberately set out to learn the duties of the next higher job . . . selling. As a successful salesman, he succeeded his boss. When further progress seemed limited, he set out for the States and followed the same business for several years. Saved his money, too, and when an opportunity arose to invest in an oil business that operated filling stations around Denver, he became its junior partner and sales manager.



3 A natural bent for merchandising led to his developing programs that interested similar enterprises all over the country. He sold out and moved east to go into business for himself. Selling these plans to filling station operators, Bob came in daily contact with car servicing. From this, it was a small step to partnership in an automobile financing concern. Then came World War II and his four years in the Navy.

Bob was still on terminal leave in 1946 when he visited Detroit and talked with Dodge executives about



4 the retail automobile business. They liked his business background and attitude. This led to his looking over a bustling town of 35,000 where a dealership was open. He liked the prospects it offered. Today Bob is firmly established there. In fact, he's also President of the local Chamber of Commerce, Chairman of the Rotary Program Committee, on the Membership Committee of the Golf Club. Bob is doing things for the community and—well, you can guess his reward.

Write for our free booklet containing a number of these stories of accomplishments by enterprising men. Chrysler Corporation, 341 Massachusetts Ave., Highland Park 3, Mich.



Chrysler Corporation

PLYMOUTH • DODGE • DE SOTO • CHRYSLER • DODGE "Job-Rated" TRUCKS



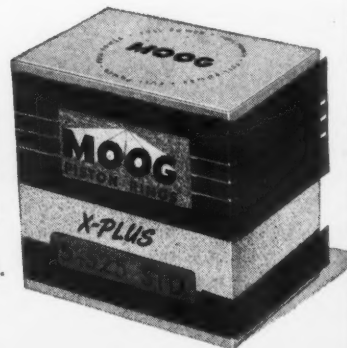
It's the Age of
FULL POWER

WHEN it's time for piston rings, it's time to FULL POWER the motor with Moog X-Plus Piston Rings and Moog Dynamized Pistons.

This FULL POWER method insures a satisfactory re-ring job — eliminates costly comebacks, — it's the method more and more Motor X-Perts are recommending. Ask your jobber for the Moog FULL POWER Story or write us.



MOOG PISTON RING CO.
Division:
MOOG INDUSTRIES, INC.
ST. LOUIS 14, MO.



COPYRIGHT 1949 M. I. I.

Where is Delco-Remy electrical equipment used?

It is used everywhere—on cars, trucks, buses, tractors, personal planes and marine applications.

Who buys Delco-Remy electrical equipment?

Practically *everyone*. Delco-Remy units are used as original equipment more often than any other make—replacement parts are purchased by service garages and repair shops all over the nation.

What is the Delco-Remy policy on older models?

Delco-Remy will continue to supply parts for earlier model cars, trucks, buses, and tractors as well as for current models... the market for parts grows larger each year!

How does one "take on" the Delco-Remy line?

Through United Motors Service... contact the nearest United Motors distributor, or write direct to United Motors Service, General Motors Building, Detroit 2, Michigan.



DELCO-REMY
A UNITED MOTORS LINE
Available Everywhere Through
UNITED MOTORS DISTRIBUTORS

Delco-Remy

DIVISION, GENERAL MOTORS CORPORATION
ANDERSON, INDIANA

WHEREVER WHEELS TURN OR PROPELLERS SPIN

I'M SURE PROUD
OF MY MOTOR JOBS
SINCE WE SWITCHED
TO PEDRICKS

YES
"HEAT-SHAPED"
PISTON RINGS
ARE BETTER!



YOU BET THEY ARE! And with good reason, too. Only by "Heat-Shaping" can a piston ring be made permanently correct in shape and tension. It takes *heat* to remove all the stresses and strains set up in every ring by factory machining operations. Unless these stresses and strains are removed before the rings are installed, the rings tend to warp or distort in service.

Because PEDRICK piston rings *are* "Heat-Shaped," they fit better, are less likely to stick, and they remain effi-

Complete Business- Building Service

Franchise Dealers also get repair information, local sales aids, big outdoor shop sign, national consumer advertising. Ask your Pedrick Jobber.

cient for far longer mileage. PEDRICK piston rings will live up to your pride in every motor job you do. They will make your customers happy, too. WILKENING MANUFACTURING CO., Philadelphia 42, Pa. In Canada: Wilkening Manufacturing Co. (Canada) Ltd., Toronto. For 29 years, supplier of piston rings to leading vehicle and engine manufacturers.

ONLY *Pedrick* PISTON RINGS ARE "HEAT-SHAPED"

**YOU can sell more
brake jobs...with
ads like this**

**in POST • HOLIDAY
COUNTRY GENTLEMAN**

**...and with
the right sales story!**

GREY-ROCK'S continuing national advertising campaign is making more car owners brake-conscious than ever before!

It's easy to follow through and turn this powerful advertising program into sales.

Talk *brakes* to all your customers. Offer to pull a wheel for a brake inspection. Sell the benefits of top-quality brake service with Grey-Rock Balanced Linings. You have a real story here, a story that convinces every customer, because...

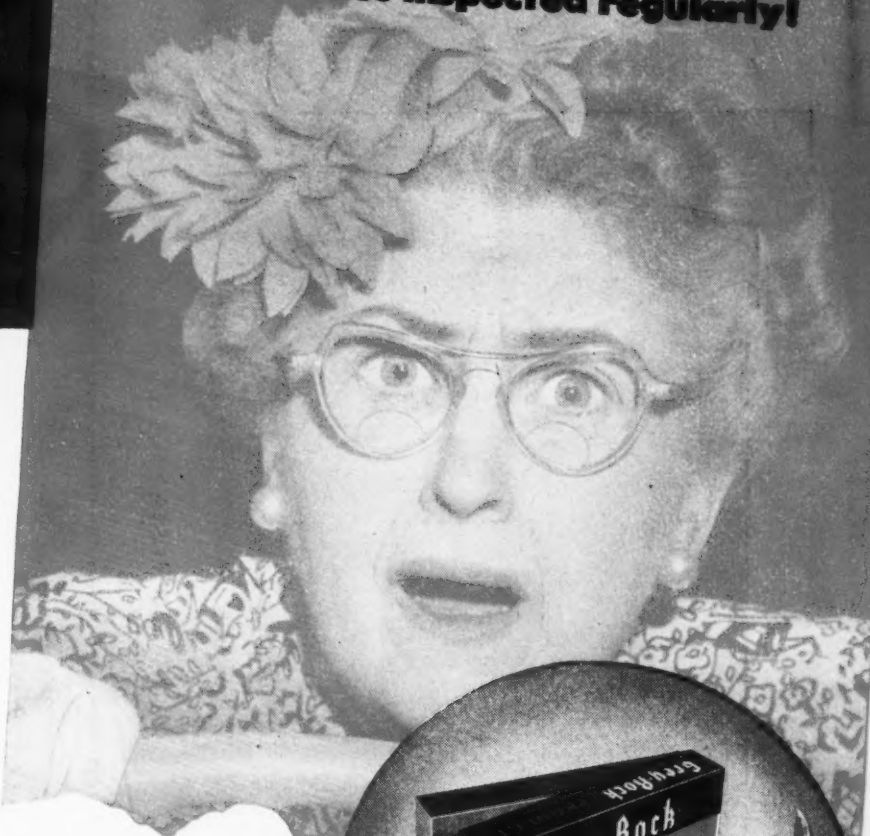
Only Grey-Rock has Balanced Braksets

GREY-ROCK DIVISION
of Raybestos-Manhattan, Inc., Manheim, Pa.

Can you

Stop Safely?

**Brakes are what counts. Get
your brakes inspected regularly!**



BALANCED BRAKSETS for passenger cars (riveted or bonded)

BALANCED TRUCKSETS for light and medium trucks

BOLT-ON BLOCKS for heavy-duty buses, trucks, and trailers

STANDARD WYRBAC SETS of Grey-Rock quality

VEE-LOK, Molded and Semi-Metallic **CLUTCH FACINGS**

FAN BELTS • RADIATOR HOSE



RAYBESTOS-MANHATTAN, INC., Manufacturers of Brake Linings • Brake Blocks • Clutch Facings • Radiator Hoses • Mechanical Rubber Products
Fan Belts • Rubber Covered Equipment • Asbestos Textiles • Packings • Powdered Metal Products • Abrasive and Diamond Wheels • Bowling Balls

"Gives a better pr



The
Original Equipment
Line

profit with each sale"



ROBERT W. DAVIS
Davis Service Station
Camden, New Jersey

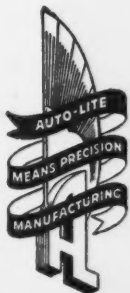


GEORGE SCHATZ
Auto Ignition & Parts Co.
Camden, New Jersey

"The Sta-ful set-up turned batteries into our leading profit line. It has the kind of promotion that sells, gives a better profit with each sale, wins new customers. Yes, and our customers constantly send their friends to get Sta-ful. With that type of set-up, your future is in the bag.' This statement of Camden, N. J. dealer Robert W. Davis is typical of the way our dealers praise the Auto-Lite Sta-ful Battery." George Schatz, Auto Ignition & Parts Co., Camden, N. J.

HERE'S WHAT Sta-ful DOES FOR YOU

- 1 Gives you a real sales leader . . . a battery that needs water only 3 times a year in normal car use.
- 2 Turns in a sweet profit on every sale.
- 3 Reduces time and bother required for checking and servicing of batteries.
- 4 Wins friends, boosts sales all along the line because the Sta-ful principle helps end a major cause of battery grief and failure.



NEW Mobiloil

Not just One—
but All 3 Modern
Oil Qualities!



"Anti-Acid"? **YES!**
"Detergent"? **YES!**
"High V.I.*"? **YES!**



NEW!
**UNSURPASSED
TRIPLE-ACTION**

Now—as always with Mobiloil—you can offer the last word in lubrication quality—the result of Socony-Vacuum's 83 years of continuous oil progress.

With Mobiloil you sell the kind of lubrication protection that builds confidence in your products and services—helps turn new car buyers into permanent, satisfied customers.

Sell New triple-action Mobiloil!



**Flows Freely—
Protects Fully—
Saves Money!**



* High Viscosity Index—the lubrication engineer's term for high resistance to change in body under extremes of heat and cold.

Now More than Ever—it Pays to

Sell the World's Best Seller

SOCONY-VACUUM OIL CO., INC., and Affiliates: MAGNOLIA PETROLEUM CO., GENERAL PETROLEUM CORP.



No Guesswork "Below Decks"—There are more than 12,000 parts in a car. To make sure that each is sound and true, engineers try out new ideas, change them, improve them—in dozens of sessions around a working chassis.

Key to Better Engineering

There are five thousand people in the engineering service of General Motors and its divisions. It is their responsibility to make cars better and better and better.

They start with the advantage of GM research, which supplies the finest available new facts about metals, fuels, gears, ignitions—everything that makes possible finer engineering.

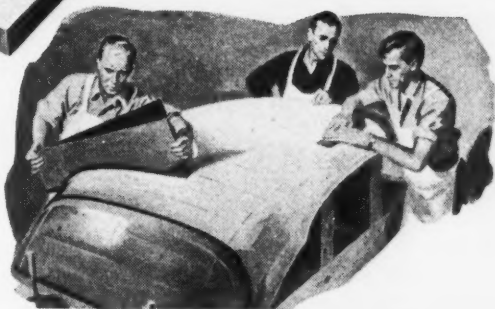
They have the largest automotive Proving Ground in the world, where every innovation must prove its worth.

Their progress is speeded by the interchange of new engineering information developed in GM's car divisions.

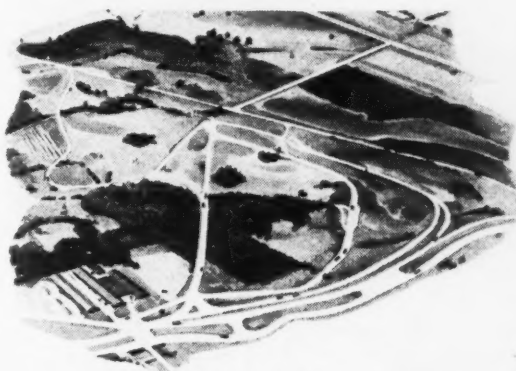
It stands to reason that all this adds up to better engineering, which means better value and better satisfaction to the owners of General Motors cars.

Engineering Note to Automotive Men

Who really leads in engineering?
This ad gives you a good idea. It's the latest in GM's "Key" messages, running as full-color spreads in America's top magazines.
It tells car-buyers about some current work by the same outfit that engineered "firsts" from the self-starter all the way to the new high-compression engines.
It tells you that GM is writing a big chapter in the industry's engineering story.



No Guesswork "Topside"—Last step, before putting a new design into production, is to carve exact, full-size models from wood, correct to the last detail. Engineers then study out every inch for comfort, roominess, visibility—as well as good looks.



5 Million Miles of driving yearly, on the 1268-acre GM Proving Ground, help GM engineers to size up all makes of cars, reveal what it takes to make cars better and better.

THE KEY TO A GENERAL MOTORS

YOUR KEY TO GREATER VALUE



GENERAL MOTORS

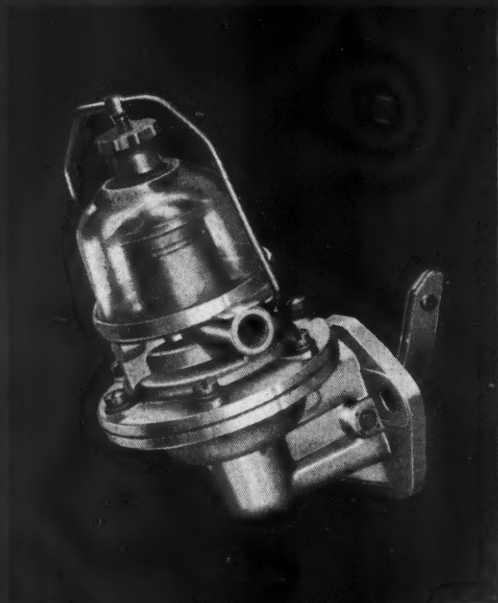
"MORE AND BETTER THINGS FOR MORE PEOPLE"

CHEVROLET • PONTIAC • OLDSMOBILE • BUICK • CADILLAC • BODY BY FISHER • GMC TRUCK & COACH

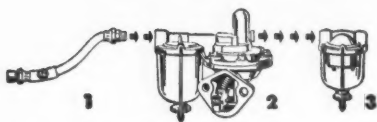
NOW! HENRY J. TAYLOR on the air every Monday evening over the ABC Network, coast to coast.

America's Most Popular Equipment Unit the **AC FUEL PUMP**

AND ONE OF AMERICA'S MOST POPULAR REPLACEMENT ITEMS



AC **FUEL PUMP** SYSTEM



1. Leaky fuel lines are not only dangerous, but cause faulty operation of the fuel pump. Install a new AC Flexible Gasoline Line when you replace a fuel pump. 2. AC Fuel Pump, Heart of the Fuel System. 3. AC Gasoline Strainer keeps dirt and water out of carburetor, promotes easy starting and protects delicate carburetor parts. Every fuel system needs one.

Do you know any other automotive unit that enjoys such overwhelming demand?

Practically every car and truck in your territory has an AC Fuel Pump.

Since 1944, AC Pump replacement sales have gone up 263%. You can easily double or treble your AC Pump sales, because people are driving their cars longer . . . more pumps need replacing . . . and it is often cheaper to replace a pump than to repair it, because of today's high labor costs.

You can get your share of this tremendous market by doing two simple things—

- ① Check your customer's pump, and
- ② Recommend replacement with a new pump as a preventive service measure. Your customers will appreciate it.

If you aren't handling AC Fuel Pumps now, you are overlooking some nice profits. They're simple and easy to replace . . . they enjoy almost universal preference. And you can make 3 profits instead of 1, by selling the complete AC Fuel Pump System.

You'll be surprised how few AC Pumps you have to stock to cover your market. Ask your AC wholesaler about this profitable preventive service today.



Be a National Advertiser—Display this Sign

AC SPARK PLUG DIVISION • GENERAL MOTORS CORPORATION



Big Market!
Ready Profit Opportunities!



WITH THE
HARRISON RADIATOR Line

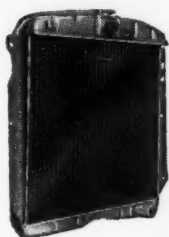
Harrison Radiator is the "hot" line in automotive cooling.

Harrison radiators are original equipment on all General Motors cars. They're *right* for replacement on Chevrolet, Pontiac, Buick, Oldsmobile and Cadillac.

And Harrison cores meet the replacement requirements for *all* cars and a majority of trucks.

Here is a continuing, profitable replacement and service market waiting for the dealer who carries the Harrison Radiator line. Fast delivery is assured through 20 United Motors branch warehouses serving independent United Motors distributors.

Get your share of this business. For complete information, call your nearest United Motors distributor, or write direct: United Motors Service, General Motors Building, Detroit 2, Michigan.



HARRISON

**HARRISON RADIATOR DIVISION
GENERAL MOTORS CORPORATION
LOCKPORT, NEW YORK**

HARRISON RADIATORS—A UNITED MOTORS LINE
Available Everywhere Through
UNITED MOTORS DISTRIBUTORS



Tips to motorists put



How to put Spring Zing in your Ford



When winter departs, it leaves cars tired and listless. Slippery pavements, deep snow, icy cold... winter conditions wherever you live... all affect the operation of your car... and the chances are it needs a real Spring Tonic.

Why delay? See that it gets a thorough Spring tune-up... the kind you'll find wherever you see the oval blue Genuine Ford Parts Sign. There, skillful mechanics will change lubricants... flush radiator... check battery, tire pressure and fan belt... inspect spark plugs, check lights, and get your Ford ready for Spring driving.

What you should do is ask for a thorough, bumper to bumper check and adjustment of all the parts of your Ford that Winter may have affected. On these pages you'll find the parts that take the worst beating from Winter, and some tips on how to tell if they need adjusting or replacing. So check up on them now.

Where to go for this check-up? At all Ford Dealers, and at selected Independent Garages displaying the GENUINE Ford PARTS sign. That sign is your assurance of having installed....

Parts that are right for Fords



DISTRIBUTOR... Winter is hard on distributors. If your engine is missing and pick-up is sluggish, it's time to have your distributor checked. Chances are, the points need cleaning... but if necessary, you can get a new Ford Distributor wherever you see the Genuine Ford Parts Sign, to restore your car's power and pep.

GENERATOR... If your ammeter needle shows discharge, it's usually a sign that your generator isn't working right. It's the heart of your car's electrical system, and when out of order, it needs prompt attention. If you need a new one, specify a Genuine Ford Generator that's just right for your Ford.



CLUTCH... Nothing's more annoying than a slipping, chattering clutch. The symptoms are a bucking, jittering car. But the cure is easy... a clutch check-up and new discs to replace those worn by winter's slippery starts and stops. Genuine Ford Clutch Discs are easily installed. They restore your Ford's smooth get-away.

at Spring Zing" into FORD Parts Sales



FUEL PUMP... If your car is hard to start, and lugs when started, check up on the fuel pump. Chances are, winter has made it inefficient... and it may be ready for replacement. A Genuine Ford Fuel Pump is the answer. It can be installed in minutes to give you sure starts and carefree driving.

IGNITOR... If your car coughs, sputters, or stalls in the oval blue line is at the oval blue line. Check the mechanic to adjust the carburetor for Spring. Early, to install a Genuine Ford Carburetor, to insure that your Ford performance.

SHOCK ABSORBERS... Rattle, rattle... bounce, bounce! That's a sure sign that the shock absorbers on your car aren't working right. Snow, ice, winter weather play hob with shock absorbers... but you can have them adjusted easily and enjoy smooth riding comfort. If replacement is necessary, be sure you get Genuine Ford Shock Absorbers... engineered for Ford.

PISTON RINGS... Using too much oil? It may be worn piston rings. Winter driving is hard on them, too. Determine whether you need a new set... and if you do, get them where you see the Genuine Ford Parts Sign. You'll save money and get real Ford performance with Genuine Ford Rings.

*Always specify Genuine Ford Parts—
Made right to fit right to last longer*

**THIS
ADVERTISEMENT
APPEARS IN
LIFE MAGAZINE
APRIL 4TH**

Powerful Campaign, Reaching Millions, Builds Parts Volume for Ford Dealers and Selected Independent Garages!

Designed to give Ford owners some practical, down-to-earth advice on spring maintenance needs, a special campaign building Genuine Ford Parts sales is now going to work nationwide for Ford Dealers and Independent Garages displaying the Genuine Ford Parts Sign.

Spearhead of the drive is a striking double-page magazine advertisement in full color that will reach upwards of 27,000,000 readers. Specific parts that suffer most from winter driving are featured, together with brief outlines of the symptoms usually present when the parts need attention.

In addition, a giant broadside covering the "Spring Zing" theme has been distributed, together with reprints in four colors of the advertisement for display use by all Ford Dealers and Independent Garages who handle Genuine Ford Parts. These displays will, in turn, be seen by many more millions.

Result—a tremendous impact on Ford owners that puts "Spring Zing" in Genuine Ford Parts sales for Ford Dealers and selected Independent Garages coast to coast!

FORD MOTOR COMPANY

BLACKHAWK®.....*your* PROFIT-PARTNER**on every job!*

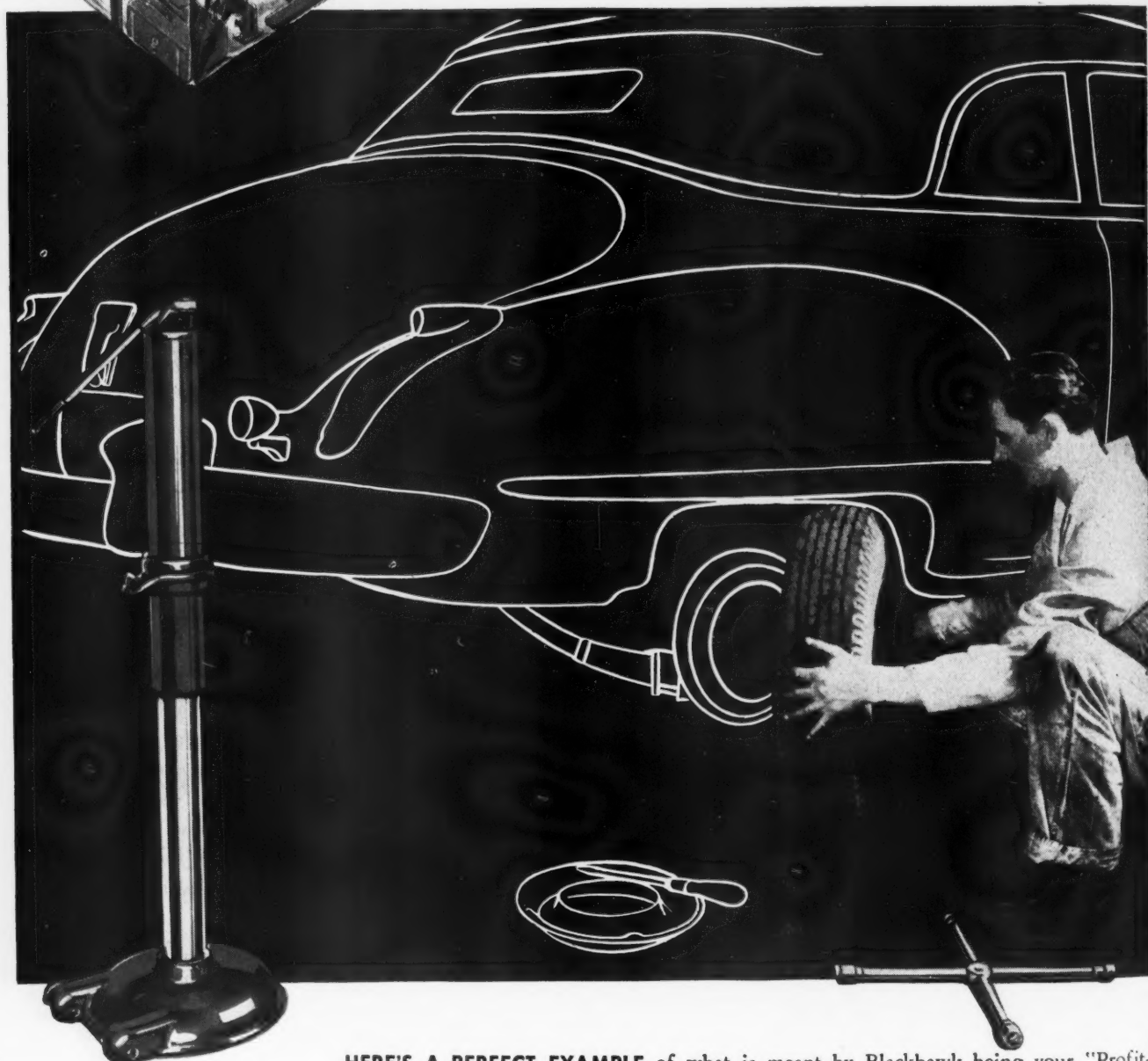


*Blackhawk Equipment is basic. Always needed are *Wrenches* — wherever there are nuts and bolts to turn . . . *Jacks* — as long as vehicles roll on rubber . . . and *Porto-Power* and *Reck-Rack* — for body reconditioning.

Of the estimated 666,000,000 automotive service jobs† to be performed this year, over 599,900,000 will require a product included in the Blackhawk "Package".

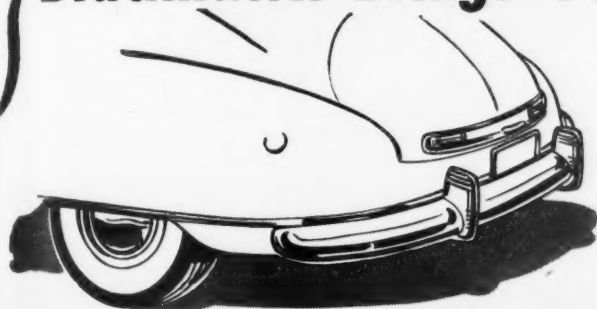
Thus Blackhawk Products profitably serve you on 90% of all shop jobs.

*From a survey by a leading automotive magazine.



HERE'S A PERFECT EXAMPLE of what is meant by Blackhawk being your "Profit-Partner". The new "LIFT-POST" speeds service and repairs in a manner unmatched by any other type of jack for similar work. And that means more profits for its owner!

New Cars Bring New Service Problems... Blackhawk Brings You the Profitable Answer

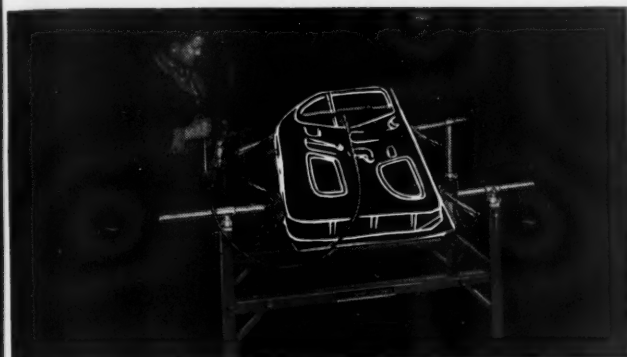


EXAMPLE: Deep-skirted, wheel-hiding fenders — for which Blackhawk's adjustable, high-hoisting "LIFT-POST" is the complete answer.

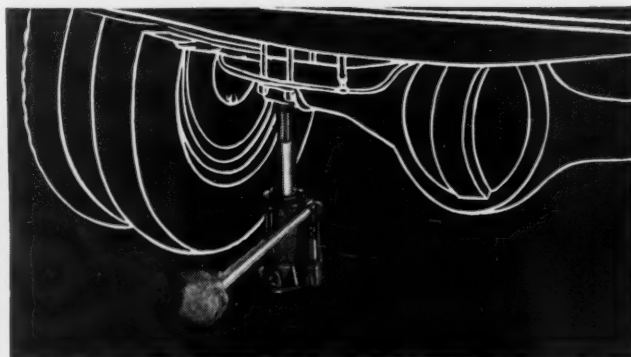
Blackhawk turns service headaches into profits for you. That's why Blackhawk and Blackhawk products are your "Profit-Partners" . . . and why it's always good business to occasionally ask your jobber, "What's new from Blackhawk?"



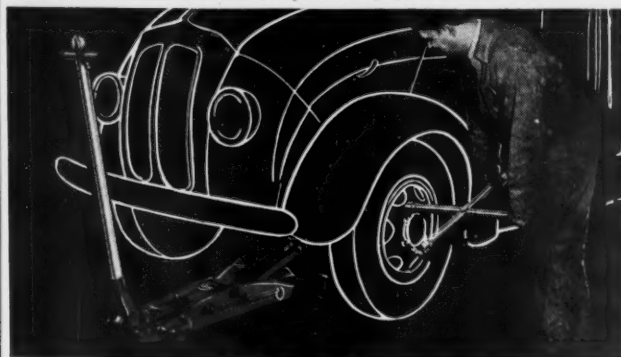
The "BLACKHAWK PACKAGE" of Shop Equipment Enables You to Profitably Meet Service Problems—Both Old and New!



9 OUT OF 10 body and fender jobs require Porto-Power or Reck-Rack or both. With today's cars, Porto-Power and Reck-Rack are essential for profitable body work. Fast used-car appearance reconditioning demands Reck-Rack and versatile Porto-Power hydraulic equipment.



TONNAGE and axle heights of all vehicles are served by economical, long-lasting Blackhawk Hand Jacks (1 up to 100-ton capacity). (You'll probably note that your axle and frame equipment comes equipped with a Blackhawk Jack). New models give you a steady resale market.



A "PROFIT-PARTNER" if there ever was one is Blackhawk's S-4 all-purpose Service Jack (it even spotlights the lift spot). Have one in every mechanic's stall and prevent work stoppages.



IMPROVE GENERAL SHOP EFFICIENCY AND APPEARANCE with Blackhawk Wrenches and Portable Blackhawk Wrench-Benches. Have mechanics take all their tools and equipment right to the work-spot.

SINCE 90% OF ALL SERVICE JOBS need equipment such as built by Blackhawk, it's sound management to ask yourself, "*Do I have enough basic Blackhawk equipment to do this fundamental range of work profitably?*"

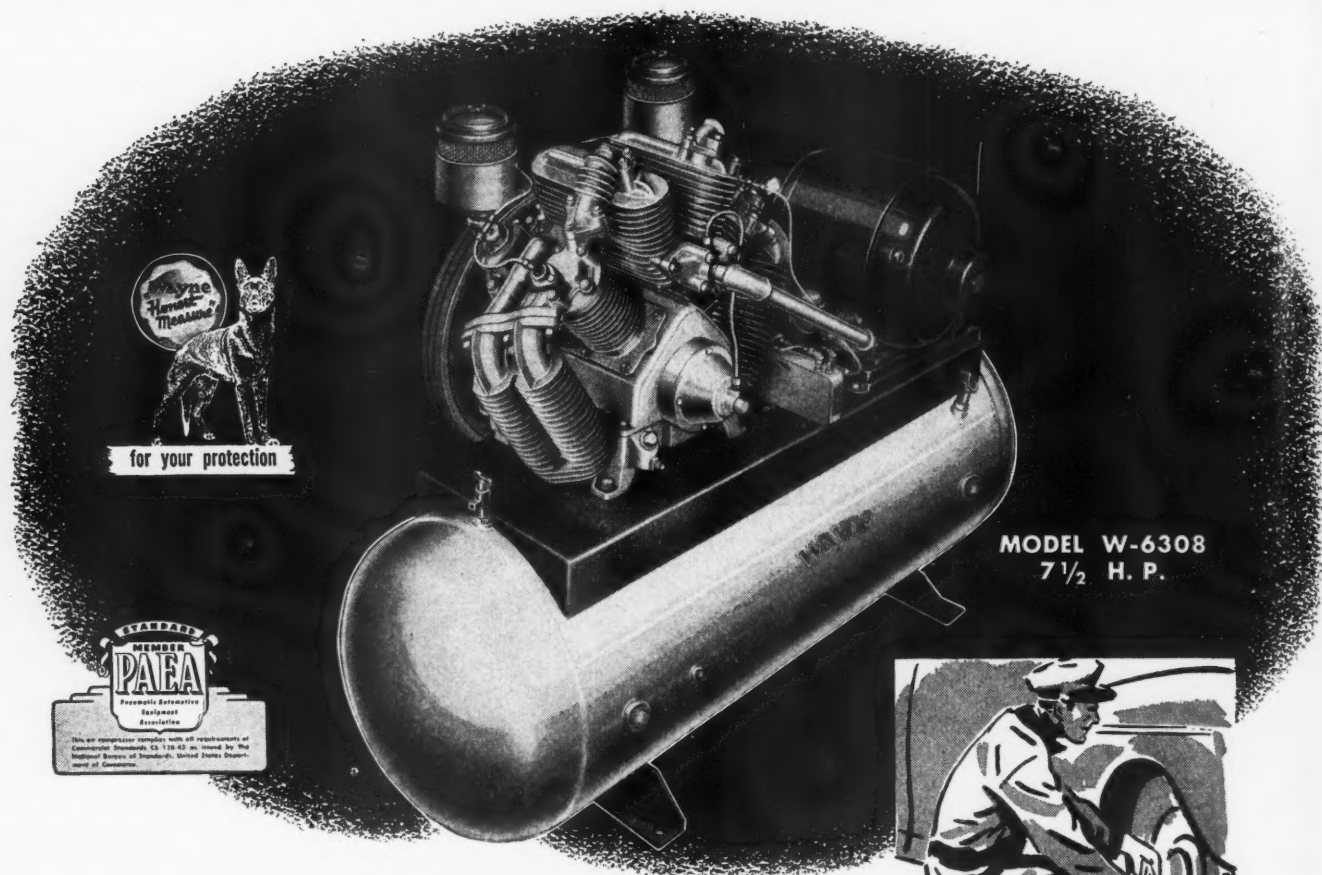
Ask your Blackhawk Jobber Salesman to show you the Blackhawk catalog. You're sure to find that the Blackhawk "Package" contains products which, on a small investment, will add substantially to your profits in all departments.

BLACKHAWK MFG. COMPANY, Dept. M649 Milwaukee 1, Wisconsin

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PLENTY OF COMPRESSED AIR is the cheapest labor you can hire. If your compressor runs too frequently or you have to wait for pressure to build up, you need a larger unit. Choose a Wayne for reliable, low-cost service. Every two-stage unit is tested for efficiency before shipment.

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**NATIONWIDE
SERVICE**

DISPENSING PUMPS

MOTOR AGE, April, 1949

"THEY NEVER MISS ...!"

by Gum

MRS. KRAKPOT SUDDENLY DISCOVERS IT NECESSARY TO MAKE A QUICK PHONE CALL ... So ...



WHERE DOES SHE PARK? RIGHT IN THE MIDDLE OF MY DRIVEWAY—



Copyright 1949, Prest-O-Lite Battery Company, Inc.

Clear the way to bigger profits

IT'S SO EASY to check the exclusive advantages offered by the Prest-O-Lite Profit Plan. Find out how the sensational Prest-O-Lite Hi-Level Battery helps win friends, boost sales and profits on every service and product you sell. Learn about the dramatic, attention-packed advertisements magazines carry to over 18,000,000 homes. Then add the famous Prest-O-Lite sales stimulators and point-of-sale helps. It's the greatest campaign in Prest-O-Lite history. Talk now to your jobber's salesman, or write to

PREST-O-LITE BATTERY COMPANY, INC.
Toledo 1 Ohio



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hi-level battery

... needs water only $\frac{1}{3}$ as often!*

*In normal car use.

Now ORIGINAL

***on 6 leading
of cars and***

AUTO-LITE



The Spark Plug of To

EQUIPMENT

g makes
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Auto-Lite Spark Plugs—Patented in U.S.A.

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**SPARK
PLUGS**

f Today and the Future !

Another Crescent Innovation!

CRESCENT-WIRY JOE MAROON PLASTIC CABLES

CRESCENT LEADS AGAIN! Now, the famous Crescent-Wiry Joe Maroon Cables are *plastic* to make them even better than ever before!

These advantages of plastic are universally established:

- **PLASTIC** is impervious to oil, grease, heat, abrasion, and is *highly resistant to acid*.
- **PLASTIC** is extremely flexible.
- **PLASTIC** does not support flame.

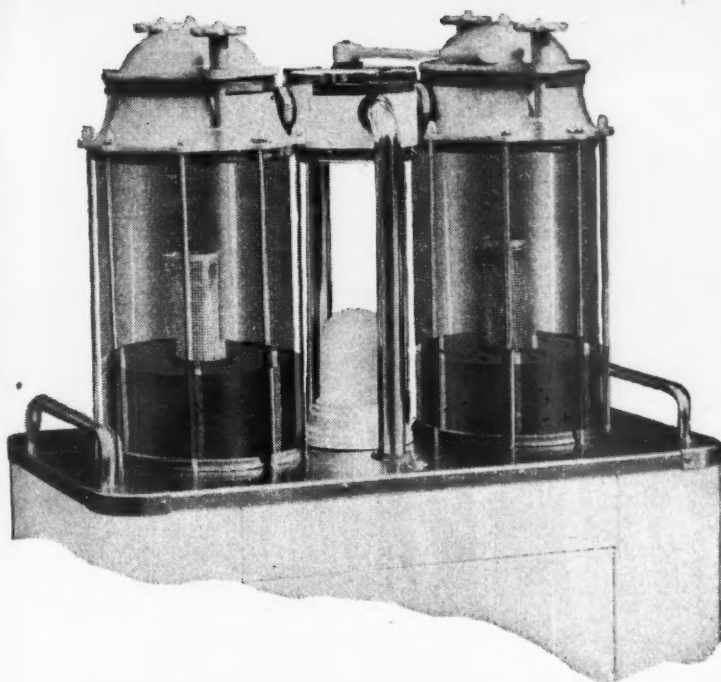
Add these features to the already outstanding list of Crescent-Wiry Joe Maroon Cable features and you have the *new* CRESCENT-WIRY JOE

MAROON PLASTIC CABLES!



✓ Check
the wire
on every
job!

WHEN NEXT IN OUR NEIGHBORHOOD, DROP IN—SEE HOW CRESCENT-WIRY JOE AUTOMOTIVE CABLE IS MADE FROM COPPER TO FINISHED PRODUCT IN ONE PLANT UNDER ONE ROOF



SEE US AT THE DALLAS SHOW

BOOTHS

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Triple Action

Cleaning . . .

1. MECHANICAL AGITATION
2. PRESSURE FILTERING
3. PRE-HEATED
CHEMICAL SOLUTION

THINGS TO KNOW ABOUT COOLING SYSTEM CLEANING EQUIPMENT

Operation—

Q: Does the car motor have to be running when using the Pressure-Purger?

A: NO. Heating elements in the Pressure-Purger heat solution to necessary temperature.

Q: Does other equipment require the motor to run for a long period of time?

A: YES, and this is harmful to the motor.

Equipment—

Q: Does the Pressure-Purger have any motors, pumps, or moving parts which develop service difficulties?

A: NO. There are no moving parts.

Q: Does other equipment have motors, pumps, and moving parts?

A: YES.

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West of Rockies \$310.

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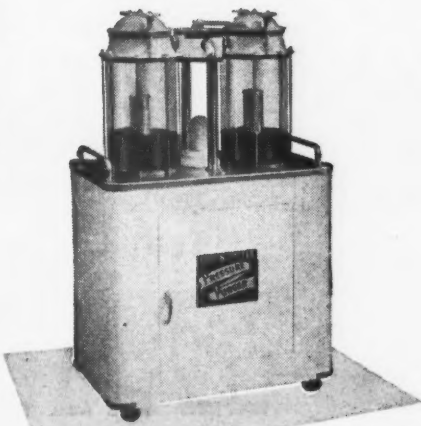


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QUIET PLEASE!

QUIET PLEASE!



REPLACE NOISY, WINTER-WORN

WALKER

"INDIVIDUALLY TUNED" TO EACH MAKE
AND MODEL OF CAR

BOOST YOUR MUFFLER VOLUME—BOOST YOUR MUFFLER PROFITS WITH THIS GREAT NEW WALKER SILENCER-SELLING PROGRAM

Quiet Please! Here's your greatest "clue" to increased muffler volume. Noisy mufflers are worn out mufflers and worn out mufflers mean business for you. *Use your ears to boost your profits. Listen* to the exhaust system on every car you service. It will pay dividends.

Now, after long, hard winter driving, more mufflers need replacing than at any other time of the year—so, again, Walker steps out with a powerful new Silencer selling campaign—"QUIET PLEASE"—and backs you up all the way with a great springtime promotion. It's the biggest profit opportunity in the muffler business.

**Dramatic consumer advertising in color in
The Saturday Evening Post, urges millions of car
owners to come to you, their Authorized Walker
Dealer for expert exhaust system service.**

**Customer-catching, point-of-sale displays, stock racks,
signs—tie you in as muffler headquarters—help you
do a better job—help you sell more Walker Silencers.**

But that's not all. Walker Silencers are *Individually Tuned* to fit every time, in every detail. The extreme precision of their design and manufacture has earned them the enviable reputation of being the easiest replacement muffler on the market to install.

I.T. . . . FIT . . . AND PROFIT . . . are reasons enough to concentrate on Walker Silencers. But with "*Quiet Please*" to help you make more sales, easier and faster, Walker offers you an unbeatable combination.

Quiet Please! Get into the muffler money—with Walker.

- For Freedom from Noise Fatigue
- For Improved Engine Performance
- For Greater Gasoline Mileage

MUFFLERS WITH . . .

SILENCERS

WALKER MANUFACTURING CO. OF WISCONSIN, RACINE, WIS.

Also makers of Walker Jacks, Lifts and Oil Filters.





Compare Super Pyro with *any other anti-freeze* in its price range!

1. The anti-freeze protection of Super Pyro is $33\frac{1}{3}\%$ more effective than that of most other types!
2. Super Pyro protects not just one or two, but *all* 7 metals in the cooling system.
3. Super Pyro—due to an exclusive U. S. I. ingredient—is *longer-lasting!*
4. Super Pyro has a new freedom from odor!

Super-Safe — that's you — if you order *your* supply of this Super Product *now!* Yes, there will be more Super Pyro — *but still not enough* to satisfy the demand for this super-popular anti-freeze. So play it Super-Safe — order your *Super Pyro now!*
CALL YOUR JOBBER TODAY!



SUPER POWER!



This Super Product deserves a super promotion . . . and it's all set! Super posters will sell Super Pyro to over 41,300,000 people. Super color ads in Look, Collier's and the Saturday Evening Post will sell Super Pyro to over 130,446,000 readers! Super newspaper ads every week will sell Super Pyro 149,908,712 times! That's Super Power! And that's what's going to send people right into your station for Super-Safe Super Pyro!



SUPER PYRO!

The Longer-Lasting ANTI-FREEZE!

U. S. INDUSTRIAL CHEMICALS, INC.

SEALED POWER

Say

EXCLUSIVE ADVANTAGES

of the **FULL-FLOW SPRING**
include:

FULL FLOW OF OIL

Through Ring 

Through Spring 


Through Piston
Oil Holes 

TWICE AS MANY SLOTS
for double oil drainage


SINGLE-SLOT SPRING


FULL-FLOW SPRING

CURVES 

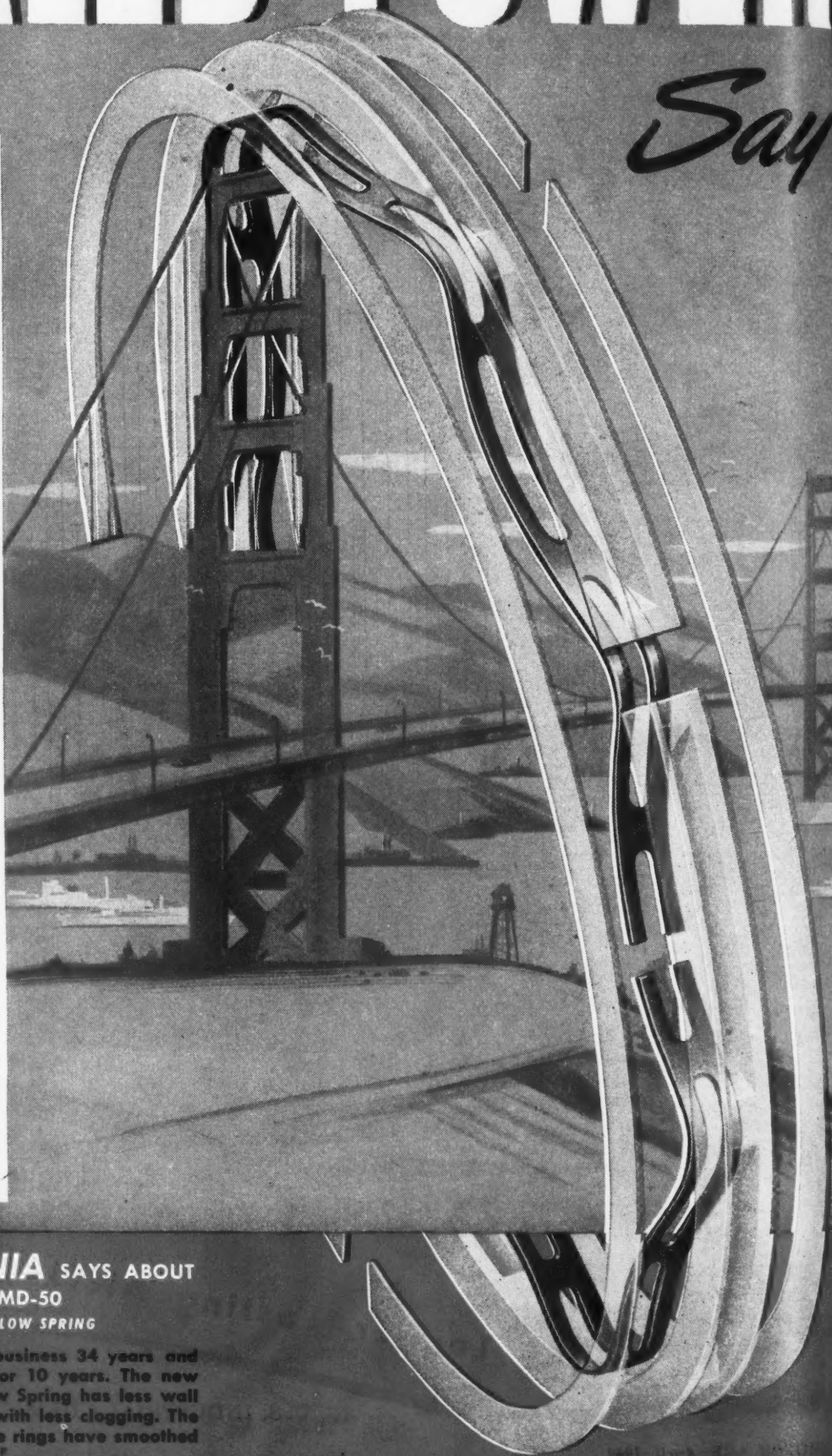
instead
of humps 
to insure

UNIFORM PRESSURE

**MORE BEARING AREA
FOR LONGER LIFE**



Full-Flow Spring's greater
bearing area means
longer life for ring and
spring. Greater resilience
means easier starting.



READ WHAT **CALIFORNIA** SAYS ABOUT
SEALED POWER MD-50

The only ring with the FULL-FLOW SPRING

"I have been in the auto repair business 34 years and have used Sealed Power Rings for 10 years. The new MD-50 Oil Ring with the Full-Flow Spring has less wall drag, and drains oil more freely with less clogging. The motors in which I have used these rings have smoothed out much sooner."

Ralph Davis Auto Service
Stockton, California

R CONTROLS OIL

Repairmen Everywhere

Mechanics from coast to coast are praising

MD-50 STEEL OIL RING


The only ring with the FULL-FLOW SPRING

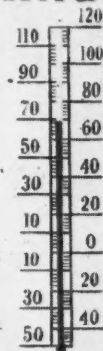
No other steel oil ring has ever made such a tremendous hit as the amazing Sealed Power MD-50! "Excellent oil mileage!" . . . "Easy starting with no tightness!" . . . "Not a single failure in 100 ring jobs!" . . . are a few of the reports from all over America.

Last year Sealed Power made a lot of startling promises for this sensational new ring. This year mechanics write, "It does everything you claim for it." Sealed Power's exclusive advantages provide exclusive benefits including the even positive pressure that controls oil in the toughest jobs. As a Sealed Power dealer, you can be proud of the Sealed Power re-ring jobs you turn out. You can *know* the car owner will save oil, save gas, enjoy the power he is entitled to. Sell the rings that stay sold. Sell Sealed Power!

Sealed Power's great 1949 profit program for you includes the finest dealer franchise, the strongest national advertising, the most complete array of merchandising helps in the industry. Talk to your Sealed Power Distributor! Sealed Power Corporation, Muskegon, Michigan.

*Nationally advertised in Saturday Evening Post, Collier's,
Popular Mechanics, Country Gentleman, Successful
Farming, Progressive Farmer.*


**SEALED
POWER
PISTON
RINGS**



**FRANCHISED
DEALER**



**EXPERT
ENGINE SERVICE**



Sealed Power

PISTON RINGS

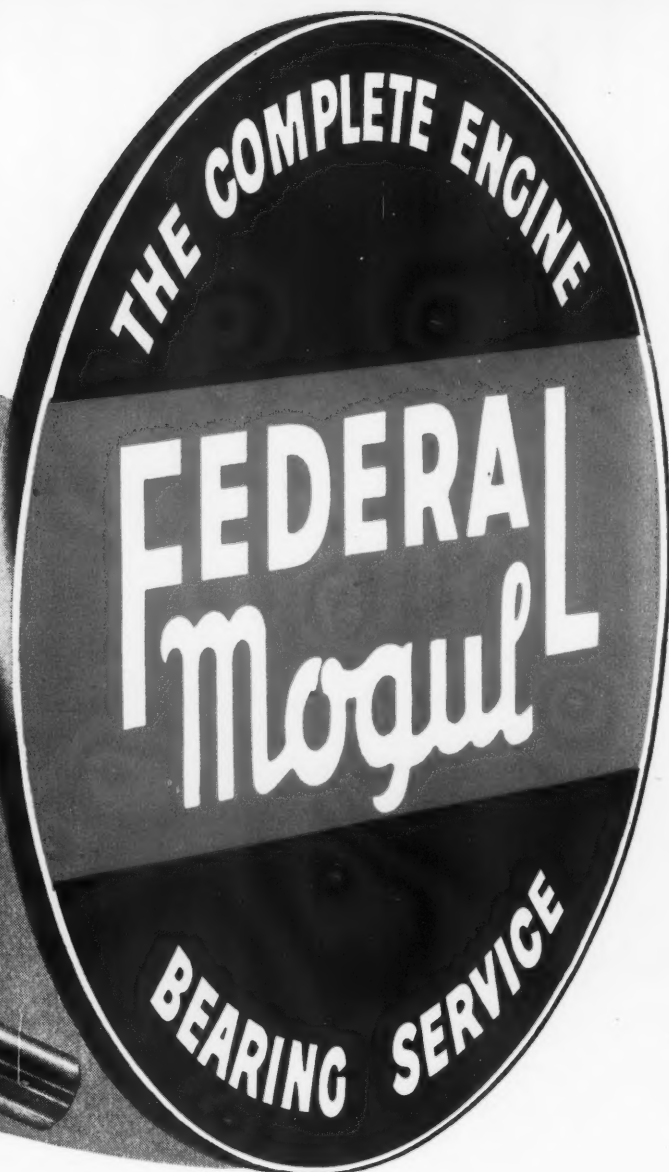
BEST IN NEW CARS!

BEST IN OLD CARS!

This big FREE thermometer sign identifies you as Sealed Power Headquarters.

The Complete Line
—Almost 7,000 Items

Engine Bearings • Bushings • Connecting
Rod Exchange • Reconditioned Connecting
Rods • Rebabbitted Connecting Rods •
Connecting Rod Bolts and Nuts • V-Seam
Piston Pin Bushings • Bearing Metals •
Laminated Shims • Solders



Ask Your Federal-Mogul Jobber!

You get the engine bearings you ask for—and you get 'em when you want 'em...from your Federal-Mogul jobber!

You can depend on Federal-Mogul Oil-Control bearings in your engine overhauls. Surveys prove that Federal-Mogul is the line best known to car owners, fleet owners, service mechanics and jobbers.

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(Division of Federal-Mogul Corporation)

1899 • FIFTY YEARS OF CONTINUOUS BEARING EXPERIENCE • 1949

MOTOR AGE

APRIL 1949



Dateline

DETROIT

— by Leonard Westrate —

The board of directors of Detroit Automobile Dealers Assoc. has voted unanimously to hold an automobile show in Detroit late this year or early next year. The show will be aimed at introducing 1950 models and will be held some time between Nov. 1 and Jan. 31, depending upon when the new models are available. It is understood that there had been some apprehension about the possibility of manufacturers themselves staging a national show in Detroit. The industry, however, definitely does not have any plans at present for a national show and it normally takes many months of preparation to stage one. Also it is not known whether or not the show will be held in Detroit when it materializes, although there has been a great deal of sentiment favorable toward bringing the national exposition to Detroit.

Car scrappage figures for 1948 compiled by R. L. Polk & Co. augur good business for the nation's repair shops. They show that only 855,517 cars were retired last year, about half the normal rate of scrappage. Consequently, about 800,000 more cars than normal will be in the market for parts and service than normally would be the case, and most of them are old vehicles requiring more parts and service than the average.



With Kaiser-Frazer, General Motors and Willys-Overland leading the parade in lowering prices, other automobile companies are buzzing about price reductions. At press time Ford announced price adjustments. General belief was that most companies would try to clear accumulated field inventories during the normal Spring upturn and then cut prices when the market tapered off in Summer. But don't be too surprised if some cut prices before then.

War Assets Administration has extended until June 1 a temporary lease held by Playboy Motor Car Corp. on its plant at Buffalo, N. Y.



A reliable source says that Crosley will adopt a cast iron engine block for its Cobra engine in place of the present fabricated steel assembly. No reason is given, but it is believed that the change is for cost advantage, rather than because of any performance difficulty with the present engine, which has been giving satisfactory results.



This is not official, but we hear that Plymouth is trying hard to get more cost out of its 111-in. wheelbase model, scheduled for production this Spring. The announced price is estimated at only \$90 to \$100 below the regular line, and the dope is that Plymouth is trying to get another \$60 to \$75 out of the price.

Dateline DETROIT . . . Continued from Page 33

Automatic transmissions are really hot in the industry right now. Biggest news is the deal in which Lincoln-Mercury will get the Hydra-Matic from GM. Nash and Packard have automatics coming, and Studebaker is reported working with a supplier on one, as is Kaiser-Frazer. In the lower price class, Chevrolet has a torque converter under development which should be ready by next year. Ford and Plymouth are working on automatic drives, but they are still under wraps.

With Chevrolet and all Chrysler divisions now using bonded brake linings, other manufacturers are expected to be using them also before too long. General opinion around the industry is that major suppliers now will make the necessary investment for equipment to supply bonded shoes to all customers who want them. Chrysler and Chevrolet bond their own brakes and supply replacements to their dealers.



The outlook for steel improves week by week. Since the first of the year, there has been a noticeable pickup in optimism of automobile manufacturers concerning the availability of steel which is being reflected in increased schedules particularly by the Big Three and also by Studebaker among the independents. Earl Shaner, told members of the SAE in Detroit recently that pipe lines for most finished steel products have been filled and in the case of the few products in which demand still exceeds supply, they will be filled within a few months. He said it is probable that before the end of this year the steel industry will be on a current order basis.



Quite a fad is developing around Detroit among the younger set for chrome simulated fender portholes similar to those on the 1949 Buick. Jobbers are doing a good business supplying them for not only the smaller cars, but also for some of the larger makes. A corollary note is that the genuine article on the Buick should not be covered, as one supplier of accessories was going to do. The Buick "venti-ports" are functional, they are designed to dispel heat from the engine compartments.

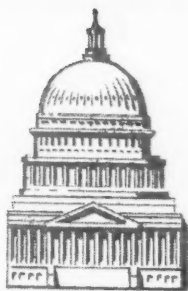
Not much has been heard lately about power steering for passenger cars but a hint dropped by one speaker at the recent SAE meeting in Detroit indicated that the subject is being explored. The speaker said that at least two companies have under development power steering units which they are testing for possible passenger car application.



Packard Motor Car Co. is in the best financial condition in its history, according to George T. Christopher, president. He said that there are no bank loans, preferred stocks, or bonds outstanding against the company. Packard recently completed reorganization of its management group through re-alignment of responsibilities.



Gossip about light cars is bobbing up again in Detroit. Actually, there is nothing particularly new or startling in the light car field at the moment. K-F revealed last fall that it has a small model designed and ready for production, and it is understood that the company may start to produce the car next year. Another independent is testing a small four-passenger vehicle with an economy engine, but has no definite plans for production. There has been more talk about Chevrolet reviving its light car project, but nothing definite at present and it is doubtful that anything will be done soon. Development had been completed on the car and a factory at Cleveland started where production would be centered when the project was dropped. Considerable work would have to be done to incorporate new design elements that have been developed since the light car was engineered originally.



by E. J. Hardy

Washington *Wire*

Motor vehicle dealers reported sales up in February—7 per cent from February, 1948, and 7 per cent from January, 1949. Filling station sales were up slightly (1 per cent) in February, 1949, compared with February, 1948.

For the first month of 1949, manufacturing and wholesale inventories rose substantially but were partially offset by declines in retail inventories. Total business inventories at the end of January amounted to \$54.2 billion, an increase of \$165 over the previous month. Automotive dealer inventories rose \$80 million, largely in new and used cars rather than accessories and parts.



The Bureau of Federal Supply recently issued a circular discouraging the use of high-octane gasoline in government vehicles. This conservation measure would not be mandatory, but government motor vehicle experts feel there is nothing to be gained by the use of high-octane gasoline due to the large number of low compression engines still in use. It will be remembered that a Presidential order was issued during the fuel shortage in the winter of 1948-49, calling for the use of regular gasoline in government vehicles. This order was later revoked, but government officials now feel that there is considerable merit in specifying regular gasoline as normal operating procedure.



More inner tubes made of natural rubber are on the way. The Department of Commerce has authorized manufacturers to make 40 per cent of their 9.00 cross-section and smaller tubes of natural rubber, with the remaining 60 per cent manufactured from butyl. Previously, 80 per cent of a producer's output of popular-size passenger car and small bus and truck tires had to be made of butyl.

Unemployment reached 3,200,000 in February, an increase of 550,000 over the January total, according to the Bureau of the Census. This was 600,000 greater than a year previous. Despite substantial increases in recent months, however, unemployment in February was still low when compared with prewar levels. As late as 1941, for example, unemployment averaged 5½ million, and about 1 out of every 10 persons was unemployed. In February, 1949, the comparable proportion was only 1 out of 20.



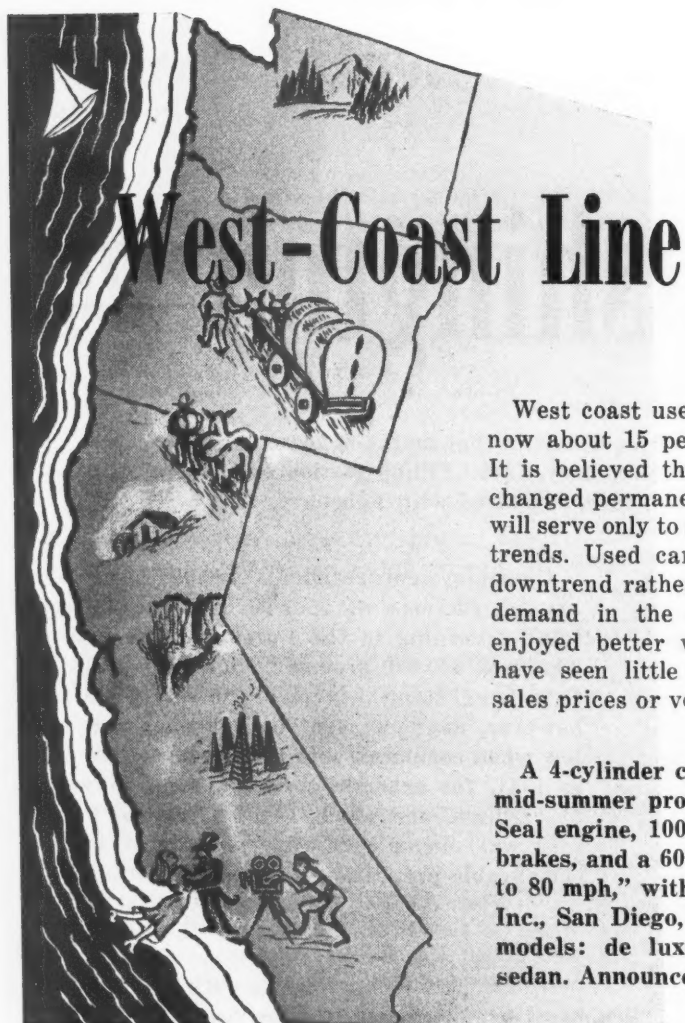
A new 60 to 80 horsepower turbine motor car has been developed in Czechoslovakia, according to information received through diplomatic channels. Naphtha, coal gas, hydrogen, acetylene, butane mixtures, gasoline, and other combustible gases may be used as fuel.



Child-labor abuses continue in many states after 10 years of enforcement of the Fair Labor Standards Act. The Labor Department reports that 4628 boys and girls were found employed in violation of the act, and that violations were disclosed in 1384 of the 29,998 establishments inspected during the fiscal year 1948.



The Interstate Commerce Commission has indicated that its present ban which prohibits amputees from driving commercial motor vehicles in interstate commerce will continue in effect.



West-Coast Line

by R. Raymond Kay

West coast used car prices continue to decline . . . are now about 15 per cent below last November's low level. It is believed that the used car market conditions have changed permanently . . . that the expected spring upturn will serve only to stabilize prices rather than to reverse basic trends. Used car prices are expected to slip back in a downtrend rather quickly following the seasonal spurt in demand in the spring months. Those areas that have enjoyed better weather conditions during recent weeks have seen little if any improvement in either used car sales prices or volume.



A 4-cylinder car, the Del Mar, has been announced for mid-summer production. It has a 63 hp Continental Red Seal engine, 100 in. wheelbase, 8 in. clearance, hydraulic brakes, and a 60 in. front seat. Speed is claimed to be "up to 80 mph," with gas mileage at 30 mpg. Del Mar Motors, Inc., San Diego, is producing this passenger car in three models: de luxe convertible, business coupe, two-door sedan. Announced cost is \$1170 f.o.b. San Diego.



New car prices generally can't be reduced until more material is available at lower prices. It's as simple as that. D. A. Wallace, president of Chrysler Division, Chrysler Corp., summed it up this way on a recent trip to the West coast. He was not too optimistic about an increase in the materials situation, either. Wallace said there is a shortage of good used cars—about 25 to 30 million postwar cars are needed on the used car market before the old cycle of purchases, trade-ins and used car sales can be re-established.



Assembly line technique has been adapted to auto and truck repair and reconditioning. The new Automotive Service Center, in Burbank, Calif., is going to operate on a 24 hour schedule, six days a week. Overnight, a car or truck can get a major repair job, including bake oven painting.



Another new car is expected to come out of the West soon. Two models are planned, a plastic "Sportster" at under \$750, and a utility "Town car" at \$475 f.o.b. Los Angeles. Mechanical features and performance data: rear engine, rear drive, 12 hp., 72 in. wheelbase, 44 in. tread. Cruising speed is said to be 45 mph., with 50 mpg.

A simplified type of fuel injection system has been developed which should be a long step toward bringing the cost of fuel injection closer to that of the carburetor. Primary advantages are increased power together with unusual savings in fuel. It is being produced for use on the Offenhauser midget racing engines by Hilborn Travers Engineering Co. in Los Angeles. At present, midgets are the principal users of this equipment, but the company feels that there are great potentialities in the general automotive fields, especially if the same increase in fuel economy can be obtained as with the racing engines.



EDITOR'S NOTEBOOK



Frank P. Tighe
EDITOR

IT'S interesting to note that several dealer organizations have taken the bull by the horns. To win public admiration for new automobiles and to fortify themselves against less tranquil times, auto shows will be used to fight off such things as television's request for our citizen's dollar.

Philadelphia—as previously reported in *MOTOR AGE*—will lead off with a show in June. Detroit dealers are likewise sponsoring a show!

Chicago—cross-roads of the U. S.—has now announced its plans for a revival of its great, pre-war national show.

Chicago Automobile Trade Association will sponsor a show in Chicago's International Amphitheater, Nov. 4-12.

Before the war, Chicago Auto Shows attracted nearly 400,000 annually. Chicago dealers figure—now is the time!

C.A.T.A. president William D. Reagan, Chrysler - Plymouth, has named James F. McManus, Jr., Chevrolet, chairman of the show committee.

When ya' gotta show — ya' GOTTA SHOW!

* * *

Did you hear about the used car dealer whose wife divorced him. Incompatability was the grounds. "You see, judge," said our hero, when I lost my 'income', she shut off her 'patability'!"

The Big 77 . . .

Seventy-seven per cent of all U. S. cars on the road in 1948 were pre-war autos. 22,894,112—count 'em.

In these ticklish days, the past war doesn't seem very far away. Yet by the calendar it began more than eight years ago!

That's a long time performance record for automobiles. However, isn't it more important to know that those who own more than three-

(Continued on page 72)

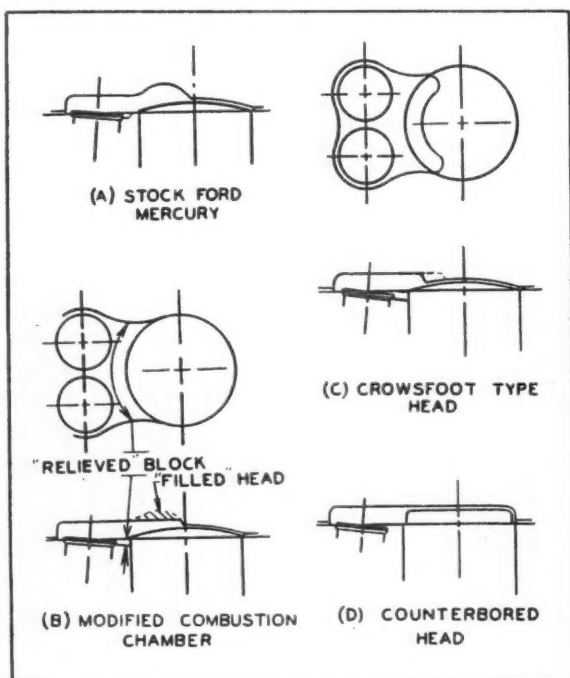




What Makes Hot Rods HOT?

By John Bond

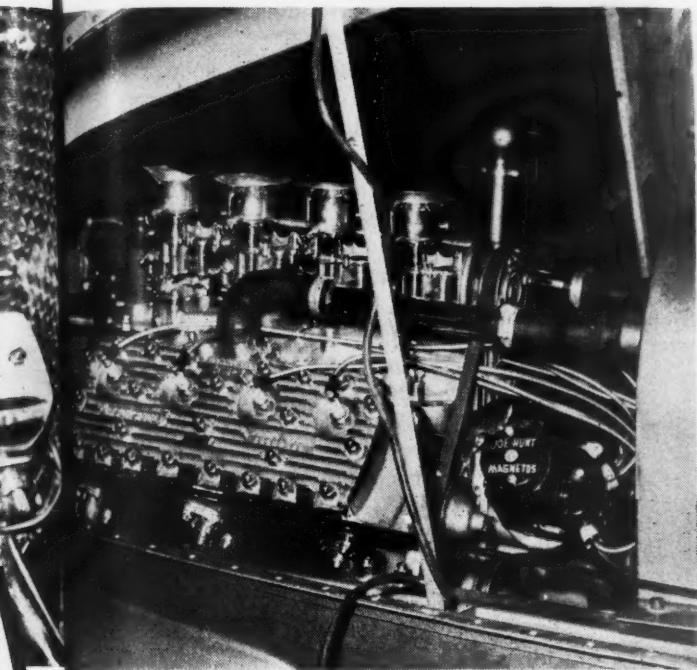
This article gives a full description of the



IN EUROPE, where "motoring" is still considered in the luxury category, the sports car is a popular type of automobile which has no counterpart in this country. That is, unless we consider the California "hot rod," or "souped-up" roadster — a sports car. Whether a hot rod is a sports car or not, the growing popularity of this type of car does indicate a demand for high performance automobile of the foreign sports type.

While a sports car has been defined as a racing car designed for use on the road, a hot rod virtually defies definition because no two are ever

Left. Details of the modifications in cylinder block and head design. For explanation, see text.

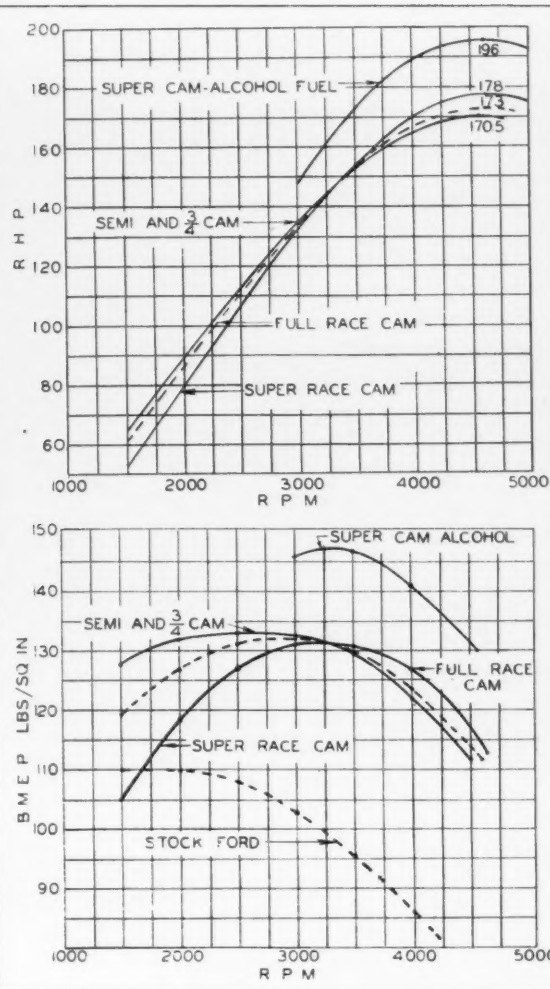


Above left. Overhead cams are the feature of this 1946 Mercury engine. The engine is experimental, using four carburetors and dual ignition.

Above. Mercury engine equipped with a four-carburetor intake manifold. Note the "finned" high-compression heads and the use of magneto.

Upper right. Brake hp curves by Edelbrock. Mercury engine bored, stroked, ported and relieved. Bore 3 5/16 in., stroke 3 7/8 in., displacement 268 cu. in. Compression ratio, 9 to 1.

Right. Bmep comparison curve of several engines.



performance data on these engines, and methods by which this performance is attained

alike. However, a few typical hot rods are illustrated, most of them built around Ford components. The 1932 Ford 106 in. wheelbase Model 18 (the first Ford V-8) is by far the most popular with hot rod builders, but the roadster body is often taken from an older model, even as far back as the model T.

The performance of a good hot rod is certainly noteworthy, as the following data will show:

Acceleration:

Standstill to 60 mph..... 8 secs
Standing 1/4 mile 15 secs

Speeds:

In 1st gear..... over 70 mph
In 2nd gear over 90 mph
In high gear..... 140,955 (stripped roadster)

In high gear..... 150.500 (race car body)

The speeds quoted are two-way record runs, electrically timed over a 1/4-mile course by the Southern California Timing Association at El Mirage Dry Lake, Calif., during the past summer. Acceleration times given are, of course, attained by only a few very exceptional cars, but a large number of hot rods can come within 2 seconds of either figure. From the speeds attained, it is obvious that something over 200 bhp is developed by the powerplants in the fastest cars.

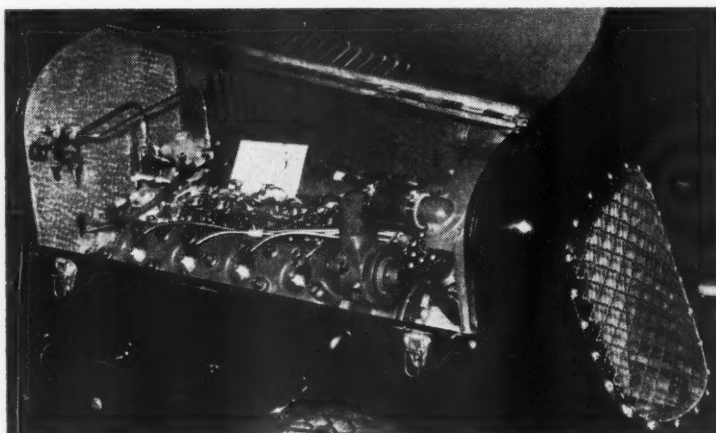
Modifications to the Ford V-8 engine, as used in 95 per cent of the cars, include the following:

1. Increasing the piston displacement.
2. Increasing compression ratio.

(Continued on Page 40)

What Makes Hot Rods HOT?

Continued from page 39



Above. This 1934 Ford was timed at 150.50 mph. Note the use of fuel injection, the system consisting of eight choke tubes, each with its own butterfly valve and injection nozzle.

TABLE I

Make	Bore and Stroke (Inches)	Displacement (Cubic inches)	Remarks
Ford-Mercury V-8	3 1/8 x 3 3/4	221	Stock 1932-42 passenger car
	3 1/8 x 3 3/4	239.4	Stock Mercury 1939-48; stock Ford 1946-49
	3 1/8 x 4	255.5	Stock Mercury 1949
	3 1/8 x 3 3/4	258.5	0.125 in. O/S bore
	3 1/8 x 3 7/8	268	0.125 in. O/S bore and stroke
	3 1/8 x 3 7/8	268.4	0.1875 in. O/S bore
	3 1/8 x 3 7/8	277	0.1875 in. bore—0.125 in. stroke
	3 1/8 x 4	276	0.125 in. O/S bore—'49 Mercury crankshaft
	3 1/8 x 4	286	0.1875 in. O/S bore—'49 Mercury crankshaft
	3 1/8 x 4 1/8	285	0.125 in. bore—0.125 in. stroke—Mercury crankshaft
Ford 6	3 3/8 x 4 1/8	296	0.1875 in. bore—0.125 in. stroke—Mercury crankshaft
	3.3 x 4.4	226	Stock 1941-49
	3 7/16 x 4.4	245	0.1375 in. O/S bore
Chevrolet 6	3.5 x 4.4	254	1949 "industrial" engine
	3 1/8 x 3 3/4	216.5	Stock 1937-49 passenger car
	3 9/16 x 3 15/16	235	Optional truck 1942-48
	3 9/16 x 3 3/4	225	0.0625 in. O/S bore—passenger
	3 3/4 x 3 3/4	248.5	Wet-sleeved passenger car block
	3 5/8 x 3 13/16	244	0.0625 in. O/S bore—truck
	3 11/16 x 3 13/16	255	0.125 in. bore—truck

TABLE II

	Late Stock	Early Stock	Semi-Race	3/4 Race	Full Race	Super (Winfield)	Super (Harmon)	Super-H
I. O.	0°	9.5°	21°	23°	26°	24°	28°	30°
I. C.	44	54.5	59	62	64	68	67	78
E. O.	48	57.5	54	56	59	68	61	64
E. C.	6	6.5	16	19	21	24	24	26
Int. Dur.	221	224	260	265	270	272	275	288
Exh. Dur.	234	224	250	255	260	272	265	270
Overlap	6	16	37	42	47	48	52	56

3. Improving volumetric efficiency.

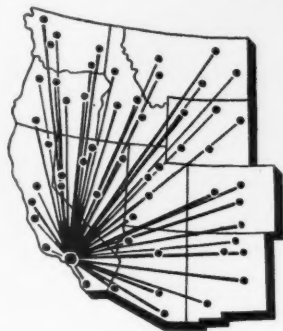
4. Increasing the peaking speed.

Table I shows eleven combinations of bore and stroke which are most often utilized for the V-8; other combinations have given displacements of over 300 cu in. The most common and widely used bore and stroke combination is 3 5/16 in. by 3 7/8 in., which gives 268 cu in. displacement, an increase of just over 12 per cent compared to the postwar Ford 239 cu in. stock engine. A bore of 3 3/8 in. is occasionally found on prewar blocks which were originally of 3 1/16 in. bore. Usually, however, the 3 3/16 in. bore block is preferred, and with some selection for minimum core shift, little or no cooling troubles are encountered even though cylinder walls are only 1/8 in. thick.

The stroke increase of 1/8 in. is secured at low cost in the following manner. A late model Ford or Mercury crankshaft with standard 3 3/4 in. stroke has crankpins of 2.140 in. dia. This diameter is 2.000 in. on 1932 through 1938 model V-8 crankshafts. By regrinding the later model shaft to crankpin diameter of 2.000 in., and at the same time utilizing the .140 in. extra stock to increase the throw radius 1/16 in., the stroke is increased 1/8 in. to 3 7/8. The earlier model rods and bearing inserts fit perfectly, and the piston pin hole of the special oversize piston is located 1/16 in. closer to the piston head to give the correct location at top dead center, since all connecting rods are 7.000 in. long center to center. Occasionally the head is counter-bored to allow the piston to come up higher, in which case the piston pin hole is bored to standard location and the ring grooves are lowered.

Piston skirts on a "stroker" are also shorter for counterweight clearance at bottom dead center. Until the recent introduction of the 1949 Mercury with 4.000 in. stroke, stroke increases of over 1/8 in. were obtained by metal-spraying

(Continued on page 113)



General view of the Pacific Automotive Show at Los Angeles Shrine Convention Hall—first of a series of regional trade shows being held throughout the U. S. The emblem on the left shows the area affected by the West Coast trade exhibit.

Service Trade Flocks to **Pacific Regional Show**

AUTOMOTIVE tradesmen came in throngs to the Pacific Automotive Show. Jobbers, their sales staffs, automobile dealers, service managers, garage men, owners and maintenance men of truck fleets jammed the Los Angeles Shrine Convention Hall in mid-March to attend the first regional automotive show in twelve years.

It was the biggest and best show ever held in this area, and every jobbing center in the eleven western states was represented. One of the surprising things was the attendance of many eastern jobbers. Show manager Rollie J. Myers told *MOTOR AGE* that the show was three times larger than the sponsors expected.

The automotive supply industry in the eleven western states has grown so large in the past eight years that hundreds of far western jobbers who never attended a national automotive show, saw its equivalent for the first time right in their own backyard.

One of the outstanding features of the show
(Continued on page 104)

There will be no Automotive Service Industries Show held in 1949.

However, plans for other regional shows are now in the making

It was formally announced, last month, that there will be no Automotive Service Industries Show in Chicago, in 1949. Their statements also revealed that the great show would be resumed in 1950.

Meantime, plans are well underway for other regional shows to which the automotive maintenance man, the car and service dealer will be welcomed guests. Among the leaders are:

Southwest Automotive Show, Dallas, Apr. 7-10.

Southeast Automotive Show, Atlanta, May 10-14.

Middle Atlantic Regional Show, Philadelphia, May 23-26.

Other regional or sectional shows are in the making.

Sell S



WHEN warm weather begins, motorists become more conscious of the performance of their cars which, in many cases, may be found to be using too much gas or to be sluggish.

It's no wonder! On a six cylinder car that has been driven 10,000 miles since the last tune up, each spark plug has fired 15,000,000 times and the distributor points have opened and closed

90,000,000 times. The carburetor has mixed approximately 1,050,000 cubic feet of air with 625 gallons of gasoline. These parts have done a lot of work, and they deserve a certain amount of attention if they are to continue to give satisfactory service. The fact that a car runs like a top through the winter months does not necessarily mean that it will continue into the summer without having some sort of trouble, and it's up to the man in the shop to show the car owner why he should have his car completely serviced

ell Spring and Summer Performance NOW

Considering the service and equipment which repair shops have to offer today, car owners can be shown why they can't afford to pass up the advantages of Spring and Summer Servicing . . . by Arthur H. Nellen, Jr.

Assistant Editor

for warm-weather driving.

In beginning a complete engine tune up, those plugs, which have fired many millions of times, should be removed and cleaned. If, after having been cleaned and examined, they do not appear burned, and have not been used over the mileage recommended by the manufacturer, the gaps should be set and the plugs installed in the engine. However, re-using old spark plugs which should have been replaced with new ones usually results in false economy.

The distributor should be removed and checked on a reliable test stand. The points should be carefully cleaned and checked with a magnifying

glass for pits and uneven contact surfaces. If the points are worn or pitted, they should be replaced. Also, points that are contacting unevenly will wear in such a way that a feeler gage will not give an accurate reading of the actual clearance. In this case, check the cam angle with a tester. Vacuum and centrifugal advance should also be tested while the unit is on the test stand. The shaft and bearings should be checked for wear by applying pressure to the base of the distributor, and watching to see if the distributor moves, causing the cam angle to change. Any change indicates that there is excessive play in these bearings. This can also be checked more accurately by using a dial gage and a spring scale, allowing a maximum play of .008 in. with

(Continued on page 108)

Servicing the

Wagner Self Adjusting

by Jack Montgomery, Technical Editor

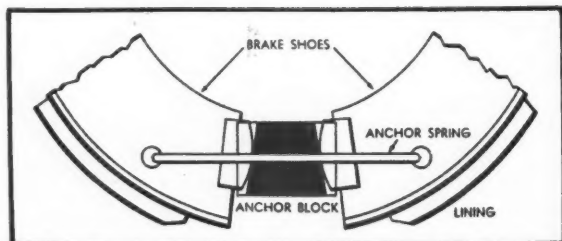


Fig. 1. View showing the rounded abutments which allow shoes to rock laterally on the block to self centering feature.

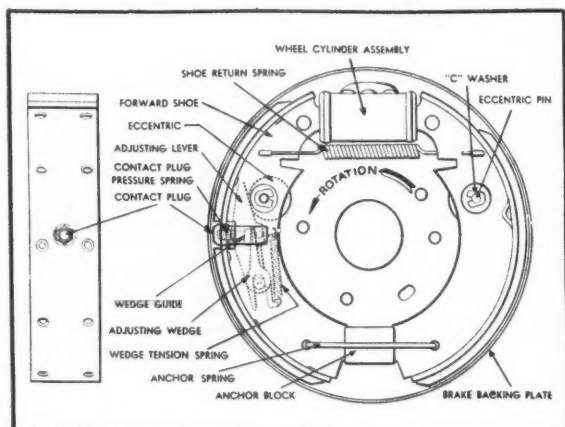
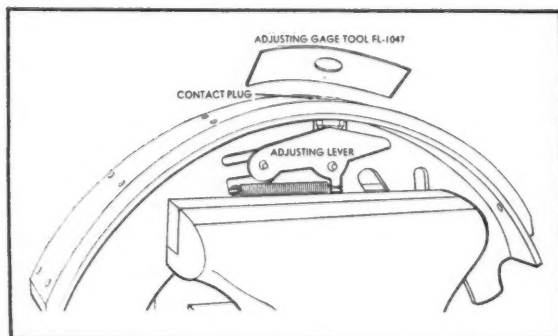


Fig. 2. Brake assembly showing the location and parts of the self-adjusting device.

Fig. 3. Holding shoe in vise to prevent movement of contact plug.



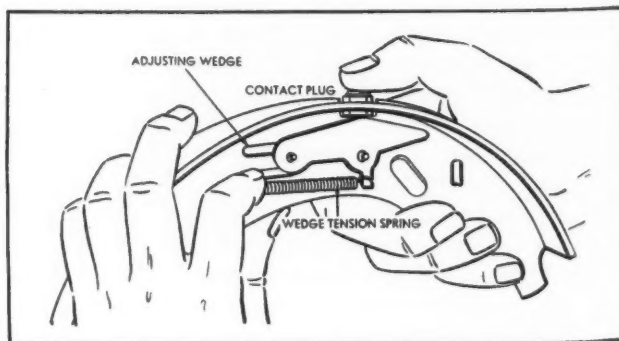
PROVIDED the master cylinder is working properly, the Wagner self adjusting hydraulic brakes should be relined when the brake pedal travel starts to increase. When this occurs, it indicates the lining is worn and needs replacing.

Drum distortion or expansion has no effect upon the self adjusting device since the mechanism is attached to the shoe and does not alter its position when the shoes are applied into the distorted or expanded contour of the drum. The movement of the contact plug depends on lining wear only. Thus preventing over-adjusting.

Shoe removal is done in the conventional manner. After the shoes are removed, take out the self adjusting device locks and press the contact plug in until the plug contacts the web of the shoe. Maintain this pressure on the plug while the wedge tension spring is being removed and the adjusting lever withdrawn. Remove the wedge, wedge guide, contact plug and plug pressure spring.

When new lining is being installed, care must be exercised to locate properly the clearance holes in the forward shoes. To locate the hole, use a piece of paper as a template. From this tem-

Fig. 4. Testing contact plug spring pressure. Hold the wedge in fully retracted position.



g Hydraulic Brake

plate, drill a $\frac{3}{4}$ in. hole in the forward shoe lining. Rivet the linings to the shoes making sure that there is approximately $\frac{1}{16}$ in. clearance between the $\frac{3}{4}$ in. hole, contact plug lining hole and the hole in the shoe. If it is necessary to grind the lining, do not install the self adjusting mechanism until this operation is completed, unless some means are provided for clamping the self-adjusting mechanism.

Before assembling the self-adjusting mechanism, thoroughly clean each piece and inspect it for wear. Replace all worn or damaged parts. Always use a new contact plug.

Completely retract the adjusting wedge while pressing the contact plug. Clamp the shoe in a vise so that the jaws of the vise are directly beneath and bearing against the adjusting lever, to prevent the contact plug from moving. File the contact plug to within .005 in. of the lining surface.

Inspecting the Self-Adjuster Device

The device will not operate properly unless the

These brakes, which are Studebaker factory equipment, are self-centering and need no adjustment during the life of the lining

contact plug is level or not extended more than .005 in. above the lining surface. To test the wedge action, press the end of the contact plug while completely retracting the wedge. Release the plug, then the wedge. Manually push the contact plug inward at the same time noting whether the wedge advances. Then repeat the test.

To test the contact plug pressure spring, depress the contact plug, fully retract the wedge, and hold it in fully retracted position while pressing and releasing the contact plug. This operation is illustrated in Figure 4.

(Continued on page 76)

Fig. 5. Testing the wedge tension spring action. Release the plug, then the wedge.

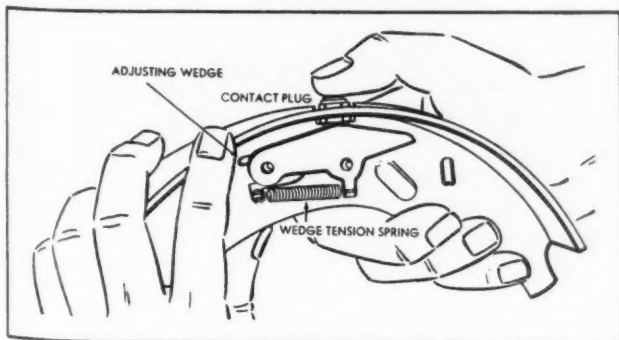
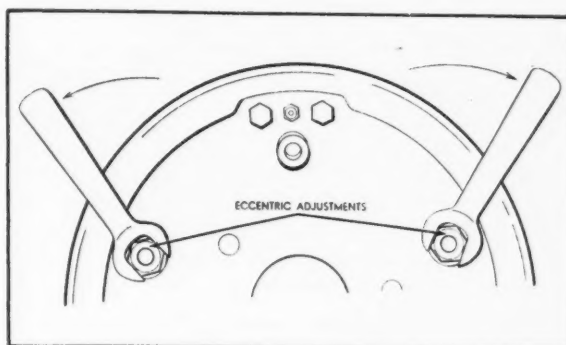


Fig. 6. Initial adjustment of cams. Turn cams in direction of arrows to tighten shoes.



Pop Takes the HEAT OFF

A thing so simple as burning brakes should be "duck soup" to him, thought Larry—but he found that he's no cook

by Charles M. Kenyon
Managing Editor



TOMMY WINTERS was pumping gas into a Buick convertible when he heard another car pull up in front of Pop's repair shop. He looked up and waved. It was young Freckles Petersen in Fagin's Meat Market delivery truck, a converted '41 Studebaker. As the Buick drove off, Tommy went over to the Studebaker. "Hello, Freck," he said to the towheaded sixteen-year old driving it. "What seems to be the trouble?"

"Hello, fellow," said Freck, looking owlishly through horn-rimmed specs. "If you're a mechanic, you can tell me. Otherwise fetch me a person with experience and savoir faire."

"Well," said Tommy, unperturbed. "From the looks of the outside, a wash job? Perhaps a wax? From the sound of the engine, an overhaul? Or this week we have a special in transmissions and rear ends?"

"Not even warm," said Freck. "If I may throw you a clue."



"What's the matter, kid," broke in Larry Tate, brusquely. "This cigarette sucker tryin' to give you a rough time."

Elaborately ignoring Larry, Freck turned toward Tommy. "This boorish serf couldn't be a friend.

He must be a business acquaintance."

"Look here, you," said Larry. "Do you want somethin' or don't you?"

"I don't want a thing, if we must suddenly and distastefully become exacting in our phraseology. But I'm no truck. This one smells as though it were burning . . ."

"Probably the meat in back," growled Larry. "... after I've been driving for awhile."

"Don't you have any idea what it is?" asked Larry. "You can't be completely dumb. Or can you?"

"I can," said Freck. "But it impedes the conversation. However, I don't know a thing about cars. The rear brakes get hot. If I could fix them, I wouldn't be here. And as for being



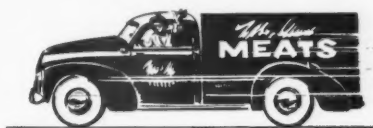
"If I could fix them I wouldn't be here," said Freck, "and as for being dumb, I'll bet you this juicy tenderloin against a chuck roast that you don't know whether red snapper's turtle or fish!"

dumb, I don't know a gadget from a widget with grease on it. But I'll bet you this juicy tenderloin against a chuck roast that you don't know whether red snapper's turtle or fish."

"It's turtle," said Larry, promptly. "An' your brakes need letting off. Which puts me two up on you, squirt." He turned to Tommy. "Fix him up." And stalked grandly away.

"I hope the blighter's righter about the brakes," observed Freck as Tommy crawled under, armed with creeper and wrenches.

Less than two hours later the Studebaker was back again with the rear brakes hot. Tommy called Pop O'Neill over immediately. Pop had Tommy pull a wheel then decided they'd better do a thorough brake job and sent young Freck back to the store with the promise that his delivery wagon would be ready for him about four o'clock. Pop called Larry and told him to go to it, with Tommy's help. And Larry took Pop at his word.



He relined all the brakes and turned the drums and set the anchors. Then he freed up the parking brake linkage and replaced the master cylinder, to be sure the return holes weren't clogged. Then he replaced both rear wheel cylinders. When the job was complete, he said to Pop, "I'll take it out and give it a good road test, but there won't be any trouble this time. I've done a real job on this one."

It wasn't too long, however, before Pop and Tommy saw Larry driving back. He slammed on the brakes, jumped out and banged the door savagely.

"What's the matter?" asked Tommy. "Do they still heat up?"

"What do you think?" Larry barked. "They're just

as bad as they ever were."

"That's funny," said Pop. "What did you do wrong?"

"Nothin'," said Larry doggedly. "This job was
(Continued on page 80)



Years Ago

in MOTOR AGE

In Dear Old Fairmount

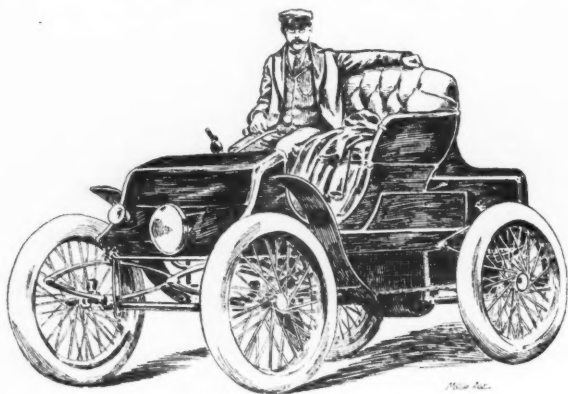
Fairmount Park, Philadelphia, with its wide greensward and rustic settings, its fine carriage roads, scene of the nation's Centennial celebration in 1876, was, in 1899, a spot for dandies to take their bustling beauties for a drive of a Sunday afternoon.

You can't say that Philly didn't wake up to the new-fangled auto for, fifty years ago its Park Commission voted to allow automobiles on "certain of the less frequented roads."

"To be sure," said Motor Age, 1899, "the automobile will be suffered to enter the sacred precincts on probation—if it be demonstrated that they destroy the roads, blight the foliage,

The first American racing vehicle was "Alexander Winton's 15 h.p. Racing Vehicle. Built for the projected race with Charron. Builder now challenges all comers to race against it."

FIRST AMERICAN RACING VEHICLE



juggernaut the children or scare the equines, out they'll go again!"

The rules amounted to these: Use the least traveled roads; "conductor in charge of automobiles must be skilled in the management of such vehicles;" "when horses become restive or frightened . . . the conductor (of the automobile) shall bring it to a full stop;" no gongs or bells, except at intersections; speed restrictions, "seven miles an hour."

Says old Motor Age: "In advocating the passage of the resolution (opening the Park to automobiles) Colonel (A. Loudon) Snowden said that the proposed concession was in the nature of an experiment, and if it was demonstrated that no evil resulted therefrom the privileges could be gradually extended until even the most frequented drives would be opened to the new vehicles. This from a confirmed Horseman, was a distinct victory for the 'dingbats.'"

Motor Age, Oct. 17, 1899

"Dingbat" was synonymous with "hot rod" fifty years ago.

MINOR MENTION

E. N. Winship and others are organizing an automobile manufacturing company at Napa, Calif. to produce vehicles under Charles E. Duryea patents.

The League of American Wheelmen harbors a plan for inducing all owners of automobiles to join under its banner for the good roads movement.

The projected motor vehicle exhibition in Charleston, S. C., has come to naught.

In Berlin an electric omnibus service has been instituted but it is restricted to asphalted streets.

Motor Age, Sept. 12, 1899

F. P. T.

FACING YOUR WAY



GEORGE SHEARER, wholesaler, heads the Middle Atlantic Regional Automotive Show



T.A. KREUSER of Bendix Products, currently President of the Automotive Electric Assn.



GEORGE E. VICTOR has been named President of Victor Manufacturing and Gasket Co.



JOE DAVIS, Berkeley dealer elected President of Northern Calif. Dealers Assn.

Test Your Business

with this Analyzer

Automotive businessmen, large and small, should use a Business Analyzer because it will help them take the transition from a seller's to a buyer's market in better stride.

EVERY automotive repairman knows that testing instruments are a big boon to repairs and maintenance. They save time, effort, and labor and assure customer satisfaction. Profits are increased because a mechanical analyzer sells more parts, piston rings, valves, distributors, spark plugs, and so forth. It opens the gate to profitable jobs that can't be done properly by guesswork.

But many repairmen who are wise enough to throw obsolete rule-of-thumb methods into the scrap heap by using a testing instrument in the shop are still using obsolete methods of analyzing business figures in the office. They may record their business figures accurately, but they have

no means of analyzing them quickly, no business analyzer that will give them an accurate and fast reading of over-all operation from month to month, saving them much time comparing accounts from period to period, a time-consuming and unsatisfactory process that presents only a confused picture to the mind, like tuning up an engine by guess and by gosh.

To fill the need of the automotive repairman for a speedy business analyzer comparable to the trouble-shooters that prove so valuable in the shop, we offer this simple recording gadget that makes business analysis easy and comprehensive. Knowing last month's costs and comparing them with other periods is one phase of business an-

alysis but not its all, as many seem to think. You must review your business as a going concern, not a month-to month project.

The Business Analyzer shown here provides this service effectively, economically and quickly. By means of this numerical graph, all elements that influence profit and loss are charted so that the repairman has a moving picture of

Fill in the figures under the column heads from the books. This form shows the trend of sales and operating expenses from month to month and also the trend in ratios, a perspective not so readily visualized from the books.

BUSINESS ANALYZER											
1949	SALES		COST OF SALES		MARGIN		OVERHEAD		NET PROFIT		12 mo. to date
Month ending	Current month	12 mo. to date	Current month	12 mo. to date	Current month	12 mo. to date	Current month	12 mo. to date	Current month	12 mo. to date	% of sales
January											
February											
March											
April											
May											
June											
July											
August											
September											
October											
Nov'm'br											
Dec'ber											
Total		XXXXXX		XXXXXX		XXXXXX		XXXXXX		XXXXXX	XXXX



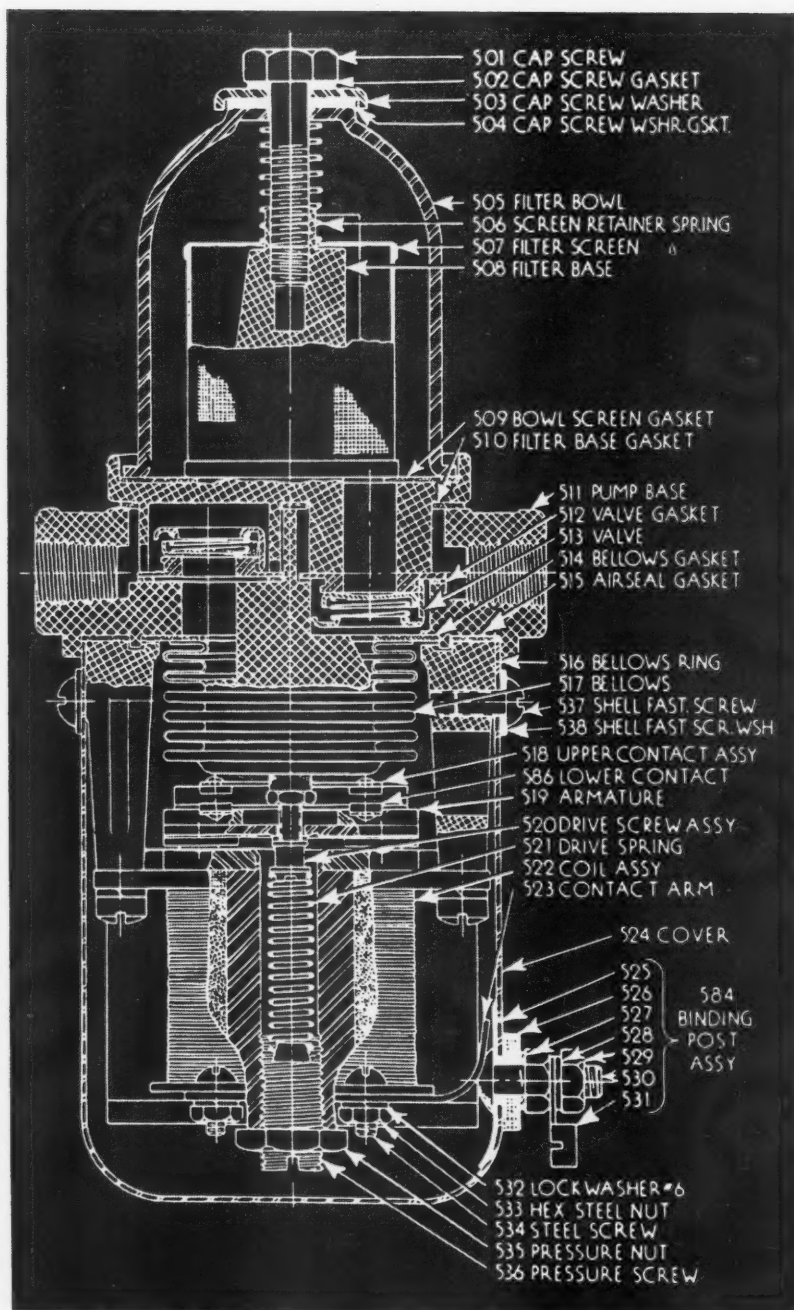
by Arthur Roberts

the business as a continuous operating unit, not an unrelated and piecemeal review.

The purpose of the Business Analyzer is to show you what your figures and ratios are to sales, cost of service and repairs, otherwise labor and materials, margin, overhead expense and net profit for the prior 12 months, and to graph their trends month-to-month so that you can visualize operating movement in one continuous flow as it is affected by the change from a seller's to a buyer's market. This transition can play havoc with your business unless you keep an eagle eye on operating movement, an objective not achievable unless you have some systematic method for

checking results with meticulous precision. The Business Analyzer, showing totals taken from the books each month, is the costing instrument for this job.

Repairmen who analyze their business figures monthly, and they are far too few, usually compare each account with the same account on the prior statement or they go back to the same month in the prior year to make the comparison. Those who do not prepare profit and loss statements monthly, either check the current month's results against the prior statement, which may have been prepared months before, or they pass
(Continued on page 84)



Servicing the Autopulse

by
Jack Montgomery
Technical Editor

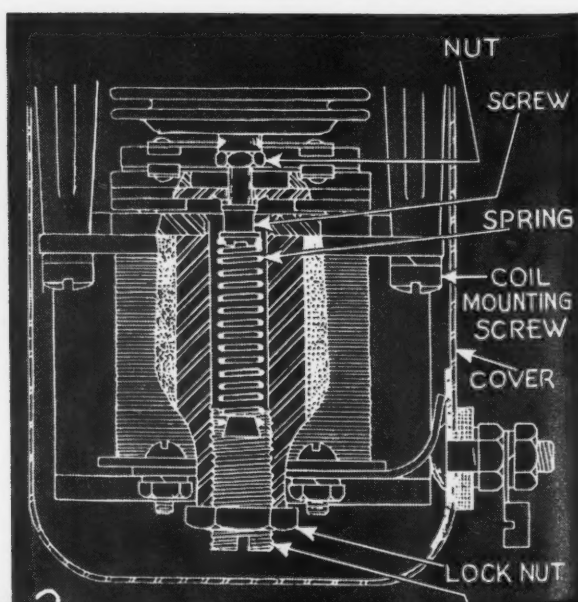
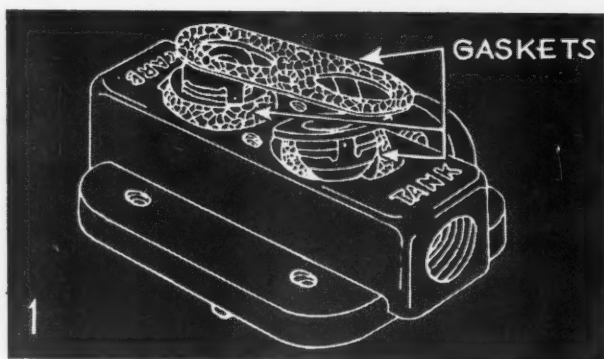
THE electric fuel pump differs from the mechanical fuel pump in that it uses an accordion type metallic bellows actuated by a 6 volt solenoid to obtain the pump action performed by the diaphragm and engine camshaft operated rocker arm in the mechanical. A pressure adjustment is also provided in the electric pump.

Overhaul Procedure

To service the valves, remove the filter screen assembly and 2 screws and lift out the valves. Clean

Fig. 1. Lower left. View of the valves and gaskets with filter screw removed.

Fig. 2. Below. The electric pump coil and armature, showing various adjustments.



e Electric Fuel Pump

This fuel pump is used as replacement on many cars and trucks, and was used on some Hudsons as standard equipment

the valves thoroughly and check them for wear and warping. To resurface the valves, use a piece of crocus cloth. New gaskets should be used as shown in Fig. 1.

Armature Removal

Remove the cover assembly, screw and spring. To separate the coil assembly from the rest of the pump, use a $\frac{1}{4}$ in. magneto wrench to loosen the drive screw nut which is located below the bellows stud. (See Fig. 2.) Insert a thin screw driver into the coil hole and loosen the bellows screw. Remove the coil mounting screws and separate the coil from the armature by removing the armature mounting screws.

(Continued on page 98)

Fig. 3. Below. View of the bellows being removed and gasket locations.

Fig. 4. Upper right. View of the armature and contacts. Note the centering tool "A" in position.

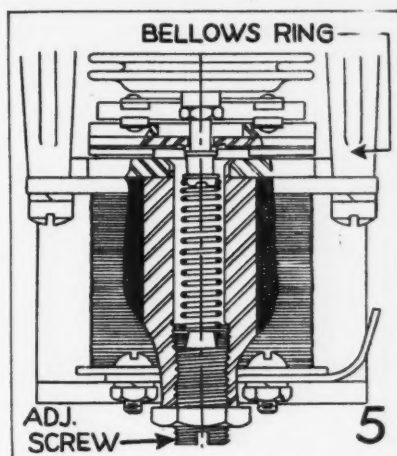
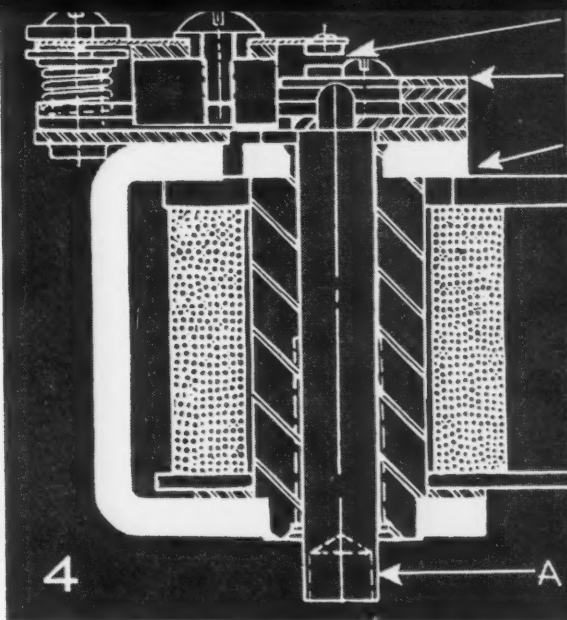
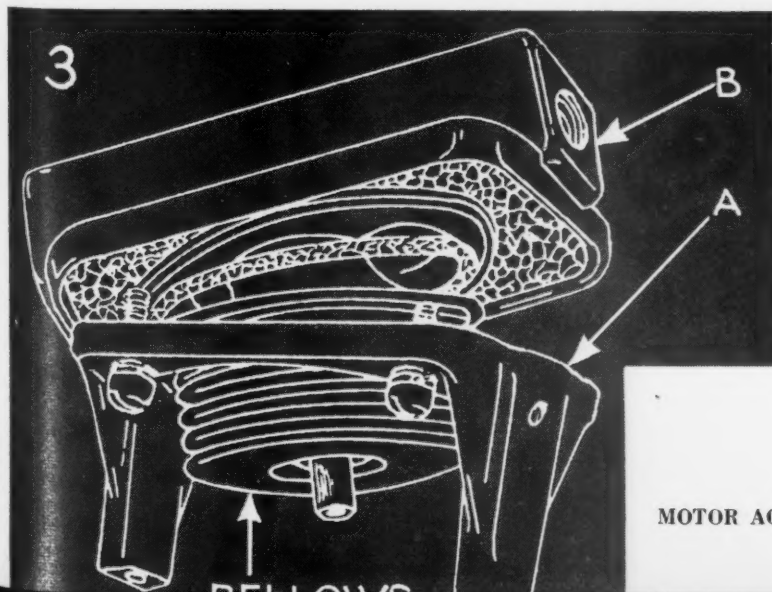
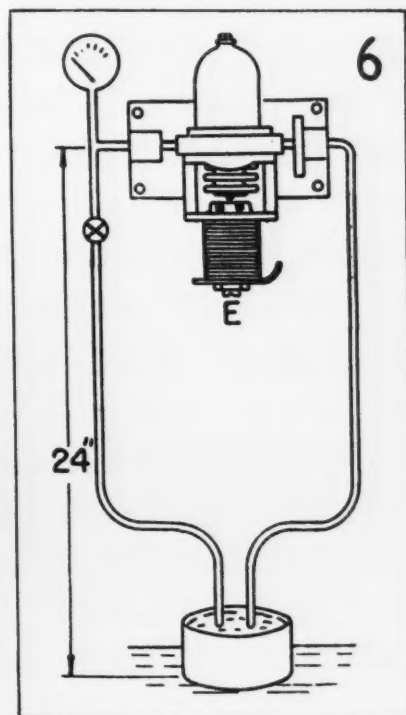


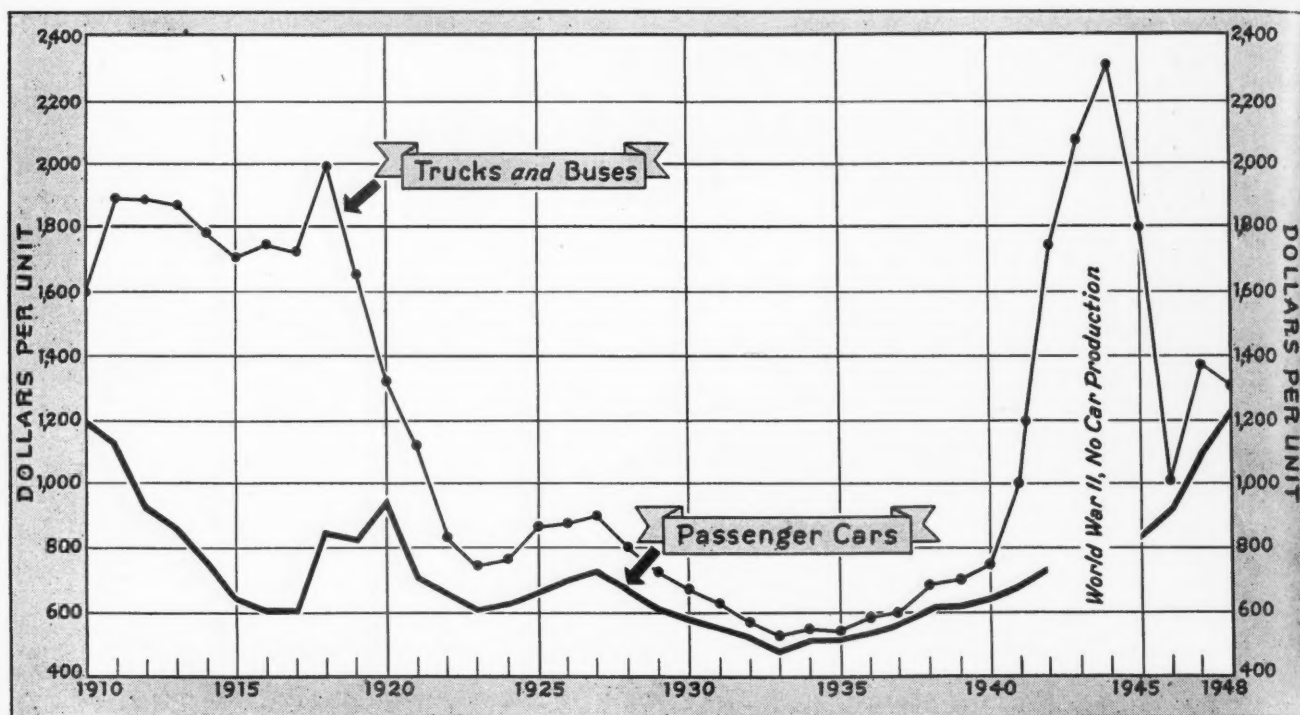
Fig. 5. Assemble the coil and armature as in the sequence shown at the center right.

Fig. 6. Right. Pump mounted in test rack ready for final adjustment. Pressure is adjusted by turning screw "E."



The Fluctuations of Motor Vehicle Prices—1910-1948

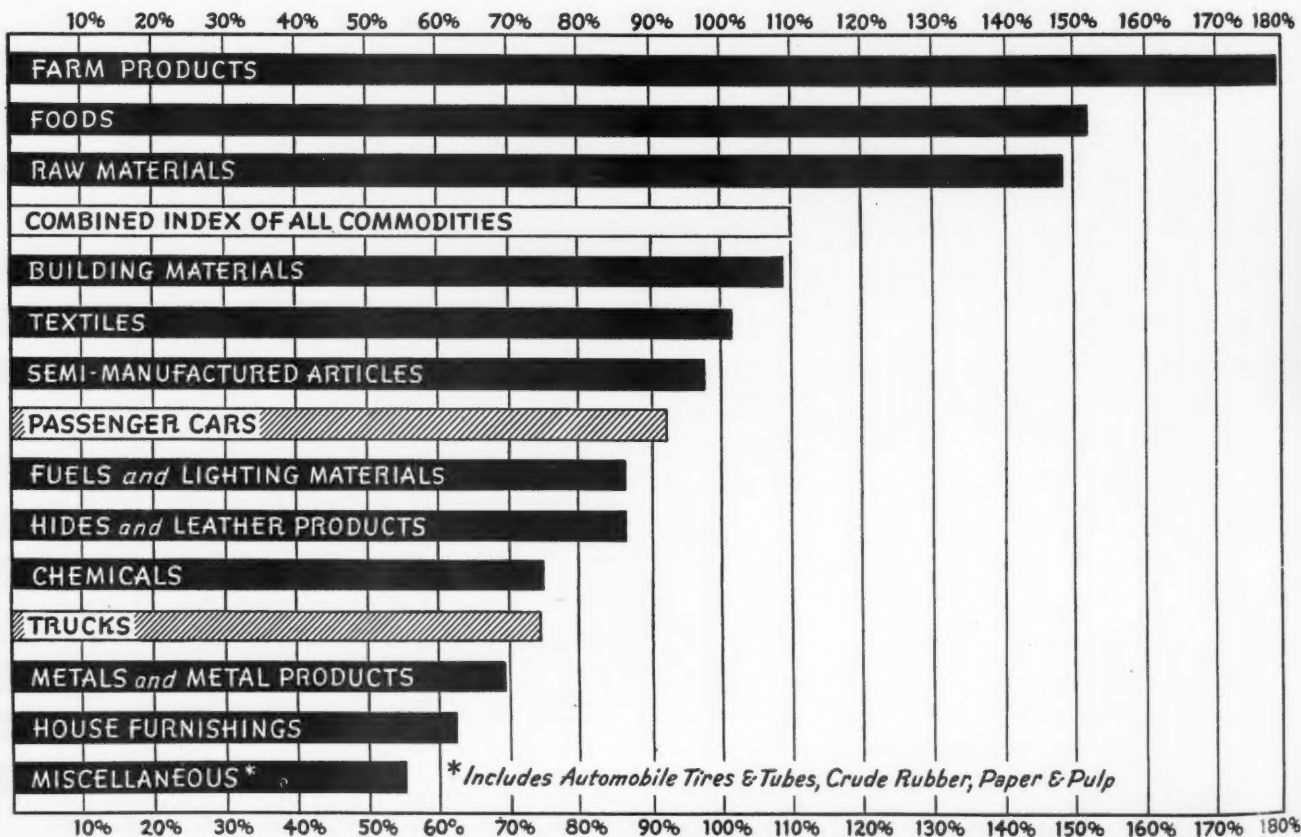
Weighted Average Wholesale Price per Unit Sold
Based on Factory Sales of Motor Vehicles as Shown on Page 78



Increases in Motor Vehicle Average Wholesale Price—

1948 OVER 1940 COMPARED WITH WHOLESALE PRICE INCREASES OF OTHER ITEMS

Shown as Percentage Increase Computed from Bureau of Labor Statistics and Automotive Industries, Indexed on 1926 average as 100



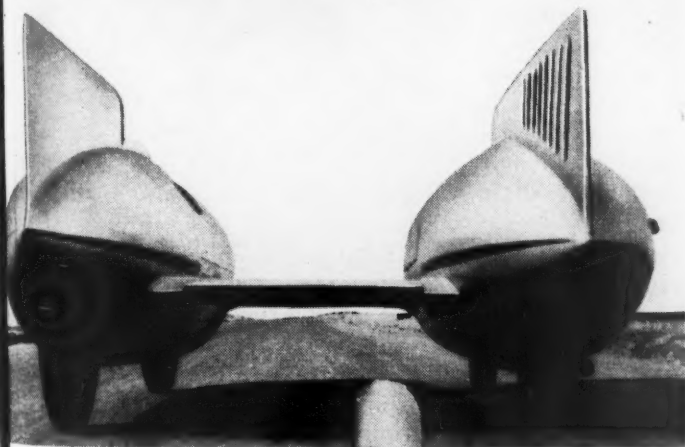
NEWSCENE



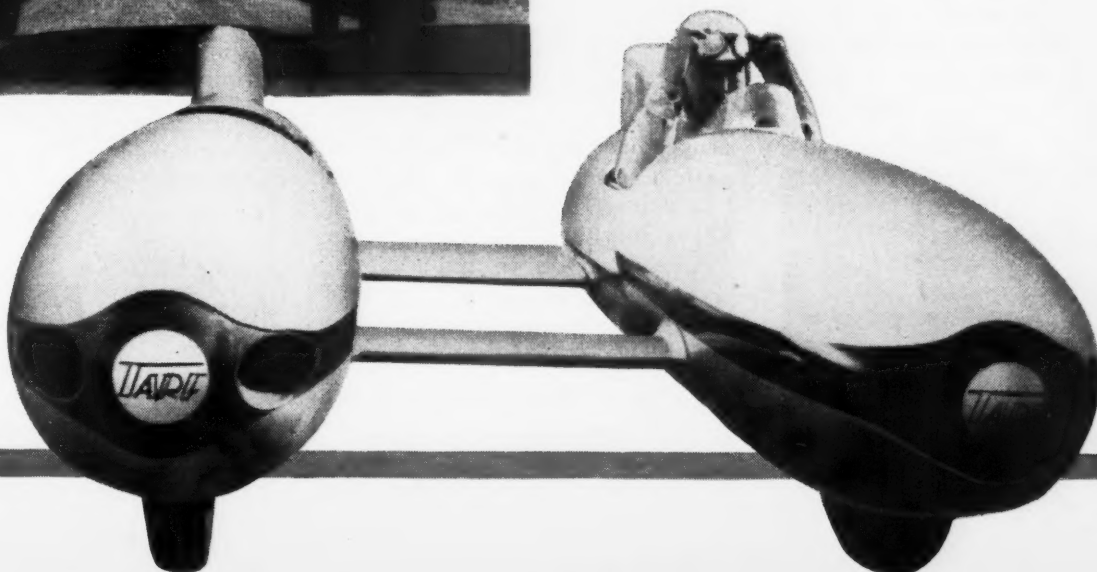
Above. The latest model of the German Volkswagen, which is to be shown in New York at the "Germany 49—Industry Show," is expected to sell for approximately \$3,000. This 4-cylinder, rear engine car has a top speed of about 80 miles per hour.



Above. Mountain Lady, a Cleveland Police horse, knows all the bus drivers and steady riders in her neighborhood. She is seen here collecting a lump of sugar while the bus is stopped for a light.



Below. It took two minutes and 18 79/100 seconds for Pietro Taruffi, of Rome, Italy, to cover five miles, thus setting a new record on this twin-bullet motorcycle. Note in the view at the left, the vanes which give it stability.

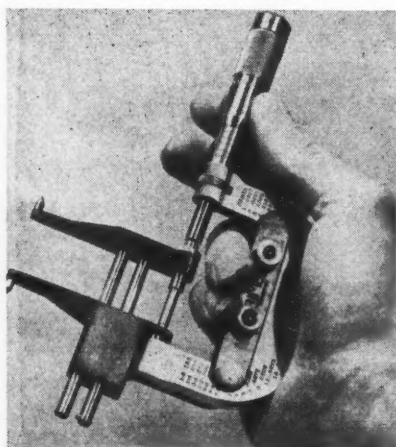


NEW

PRODUCTS

SHOW WINDOW

257



257

Rimat Machine Tool Company, Glendale, Calif., announces an improved model of the Microadapter—the attachment for outside micrometers that permits taking precision internal measurements. Operation is claimed to be easy even in locations ordinarily inconvenient or inaccessible to conventional inside micrometer sets. Since the measuring points are

cone shaped and project beyond each leg, they readily reach into internal grooves, into recesses, behind shoulders, and in deep bores. The attachment clamps to any micrometer frame and measurements are read directly on the regular thimble with original micrometer accuracy.

258

The Aro Equipment Corporation, Bryan, Ohio, announces a new line of Aro "Jobmaster" Tool Kits to meet the requirements of all types of automotive applications. The No. 2 Kit includes 7 tools for jobs such as drilling, polishing, grinding, sanding, hole sawing, etc. The tools can be assembled to provide a 1-inch hole saw, 2-inch grinder, right angle drill, polisher, 7-inch sander, 1/4-inch drill (pistol grip), and 1/4-inch drill (button control).

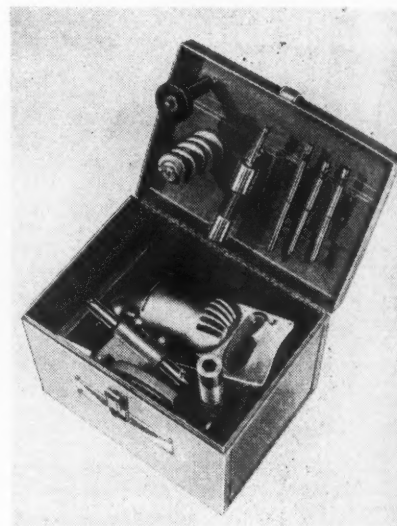
259

The United States Electrical Tool Company, Cincinnati, Ohio, has developed a new heavy-duty valve seat grinding set. This set, for use on all current model passenger cars and light truck valve seats, comes complete with a heavy-duty high speed driver and heavy-duty stone dresser, stone holder, pilot wrench and a supply of pilots and stones.

260

The Auburn Clutch Company, Division of Dana Corporation, Auburn, Ind., announces the introduction of a new replacement clutch for Chevrolet cars and

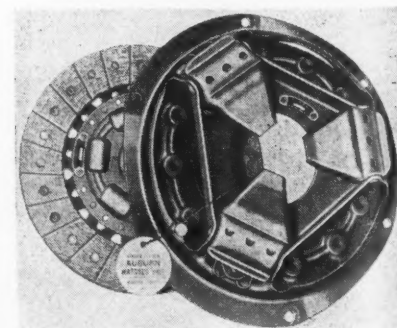
259



light trucks from 1938 to 1948. The new model is a three-lever, adjustable-type clutch constructed on the same basic principles as used in all Army Jeep clutches.

Soft pedal action is said to be attained through the use of three springs under each lever. Full torque capacity is provided by the

260



258



FOR FURTHER INFORMATION
USE COUPON ON PAGE 58

action of these springs through the lever ratio of the release levers. The pressure springs do not contact the pressure plate or "hot plate" and therefore run cooler and retain their full functional life longer, the manufacturer states.

The plate has six damper spring units around the hub to dampen out vibration and gear rattle.

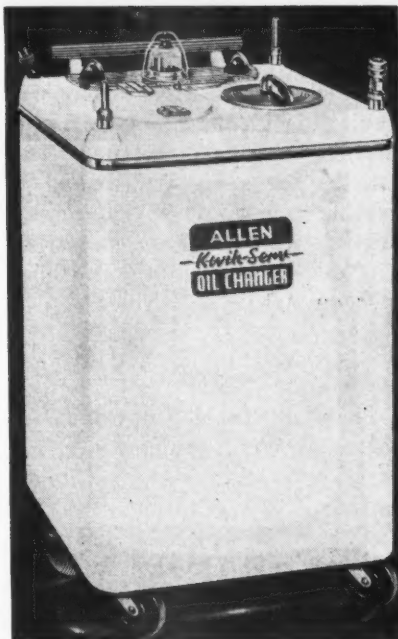
261

The Allen Electric and Equipment Company, Kalamazoo, Mich., announces a fast oil changer. The new Kwik-Serv Oil Changer is claimed to drain and refill oil in less than 3 minutes. One of the features claimed is a 3-way selector valve which enables operator to fill reservoir with new oil while crankcase is being drained. As soon as old oil is removed, selector valve is turned to Refill position and new oil is immediately pumped into crankcase. Oil is drained from dip stick opening and refilled through vehicle oil filler pipe. Three snap-on type nozzles are furnished to reach the lowest point in engine oil pan on all vehicles, with one nozzle servicing 80 per cent of the jobs, according to the manufacturer.

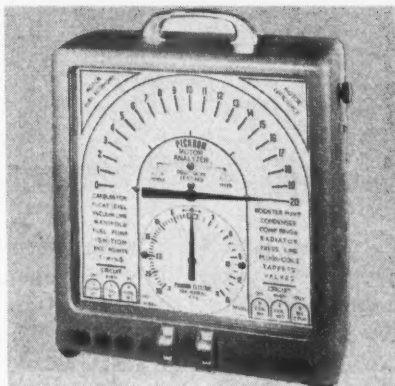
262

Pickron Electric, Rock Island, Ill., is marketing the Model D444 Motor Analyzer, a portable instrument for analyzing the various phases of engine operation. The reaction of engine performance is registered on a full 180 degree sweep scale. The manufacturer

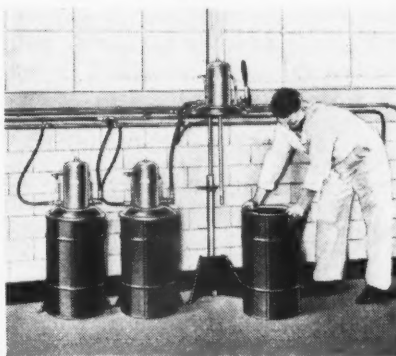
261



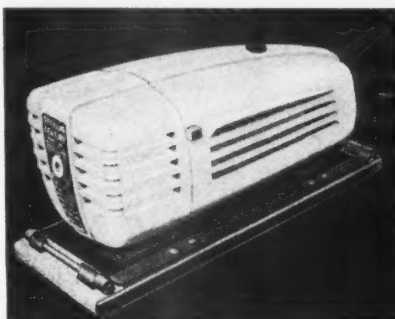
262



263



264



states that it is possible to make precision adjustments of single or dual carburetion, set timing for peak performance, check valves, automatic spark advance, fuel pump, coil, and condenser. Only two leads and one hose connection are required. The unit weighs 16¼ pounds.

263

Lincoln Engineering Company, St. Louis, Mo., announce their individual elevator units, manually operated, for 100-pound stationary drum pumps. Features claimed for these units are:

Chassis and Gear Elevator units may be installed individually as desired, or adjacent to each other to form a battery, and located remote from the lubrication department. One lift on Elevator Handles raises Lubrigun clear of drum. Automatic latch holds unit rigidly at extended height while drum is being changed. No disconnecting of air and lubricant hose necessary. Individual Elevator for each pump permits changing drum of any pump without disturbing operation of other units. Elevators keep pumps off the floor when changing drums. Elevators permit cleaner drum changing.

264

Sterling Tool Products Company, Chicago, Ill., is marketing the Century, a portable electric sander weighing 4¾ pounds and featuring a non-stalling high speed motor encased in a die-cast aluminum alloy housing. Due to its small size and low clearance, the Century can effectively sand up to corners and trim without risk of damage, the manufacturer states. Standard size abrasive sheets cut in thirds are used and as many as four or five sheets can be loaded on the pad at one time.

265

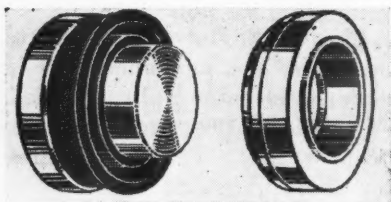
Blackhawk Mfg. Co. of Milwaukee, Wis., is marketing a new Nugget Wrench Set in a fibre box. Identified as the 30KX, Blackhawk states that this set is for mechanics who don't need a metal tool chest but who want Nuggets. The new 30KX Nugget Wrench Assortment is a compact set of 30 Nugget Wrenches.

(Continued on page 58)

New Products Continued from Page 57

266

The Meteor Manufacturing Corporation, Buffalo, N. Y., is marketing Christie two-piece Brake Pistons.



Replacements for 1946, 1947 and 1948 Chrysler, Plymouth, DeSoto and Dodge cars, trucks and taxicabs, Christie Two-Piece Brake Pistons are said to be the same size as 1-piece standard Chrysler equipment, and require no alteration.

267

The Owatonna Tool Co., Owatonna, Minn., announces two new wrenches to handle Ford and Mercury camber and caster adjustments. The set comprises two wrenches, the camber wrench No. 433, which has a $\frac{1}{2}$ inch square drive, and the caster wrench No. 432.

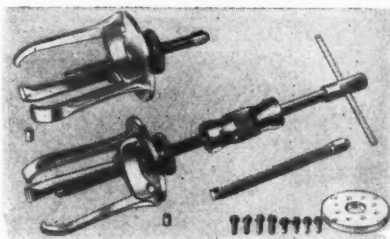
268

Independent Pneumatic Tool Co., Aurora, Ill., announces a new Thor $\frac{3}{8}$ -inch universal impact wrench. The Thor wrench weighs slightly over six pounds, and is

claimed to have high torque with negligible torque reaction. Trade-marked "Packy," the new Thor wrench has a highly polished die casting case, a free speed, forward or reverse, of 2150 rpm, strikes 2000 blows per minute, and operates on AC-DC 60 cycles.

269

Snap-On Tools Corporation, Kenosha, Wis., announces a new addition to its puller line, known as the CG-273, a three-jaw puller. Spring tension holds the jaws on the work, and a locking nut makes it possible to lock the puller on

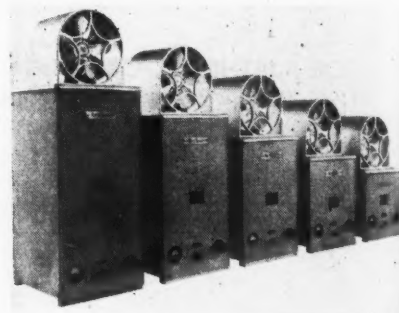


the job so it will not come off until released. This allows the operator to use both of his hands for the actual pulling operation. The jaws are forged and heat treated. Maximum jaw capacity on outside holds is $8\frac{1}{2}$ inches, and the jaws are reversible to operate through a $2\frac{1}{2}$ -inch opening for inside pulls on bearings, sleeves, etc. The yoke is forged with two sets of jaw

slots allowing the jaws to be moved closer to the center for better gripping power on small jobs.

270

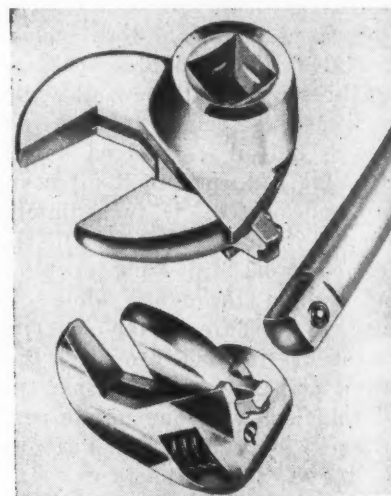
The General Ozone Corporation, New York City, New York, has designed a system for clear-



ing the air in garages of exhaust fumes. Called the General Ozone Air Clear, this unit produces Ozone electrically and diffuses it into the air. The action of the ozone is to oxidize the exhaust gases which cause headaches, etc.

271

J. H. Williams and Co., Buffalo, N. Y., announces a tool which is said to combine the flexibility of the detachable socket system with all the advantages of the open-end adjustable wrench. Williams adjustable crowfoot attachments, when used with the numerous



handles and parts available, present a variety of combinations which previously did not exist. They are made in two square drive sizes, $\frac{3}{8}$ inch and $\frac{1}{2}$ inch with capacities of $\frac{3}{4}$ inch and $1\frac{5}{16}$ inch respectively.

(Continued on page 122)

MAIL THIS COUPON:

For further information on any of the products mentioned in Motor Age write the code number of the product in the space provided below. Don't forget your name and address.

Frank P. Tighe
MOTOR AGE
Chestnut & 56th Sts., Philadelphia 39, Pa.

Code Number of New Products.....

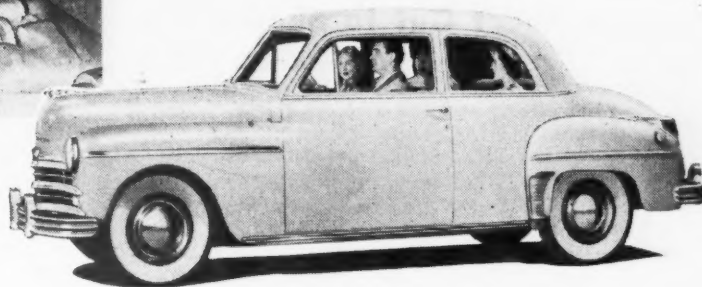
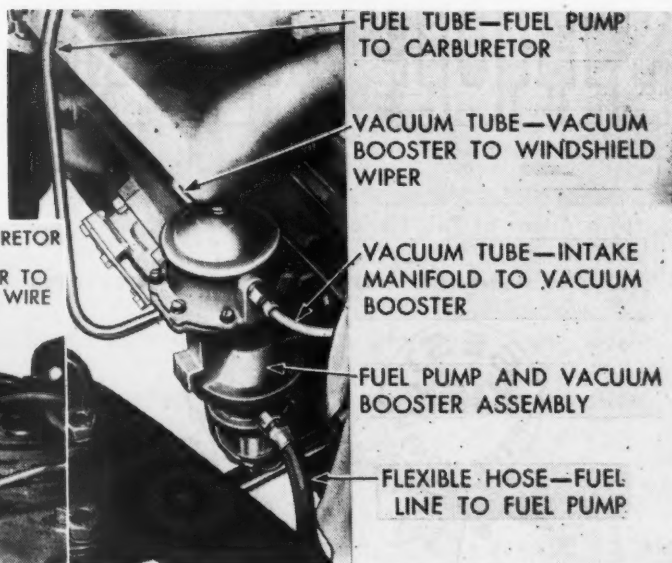
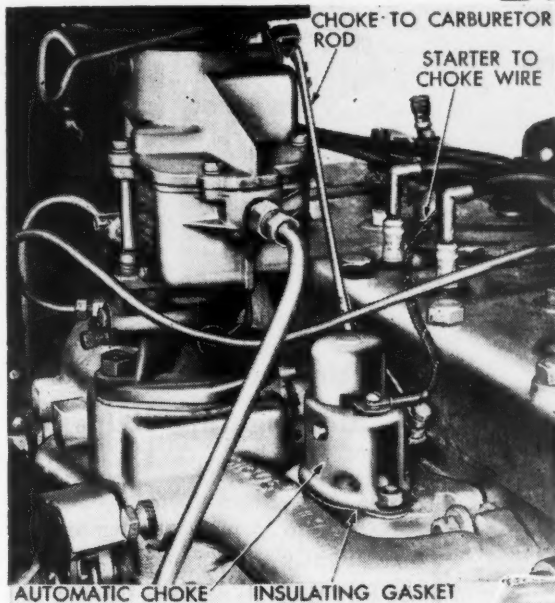
Your Name.....Your Title.....

Your Company.....

Address.....(STREET & NO.) (CITY) (ZONE) (STATE)

Right. View of the newly designed fuel pump and vacuum booster assembly used on the new Plymouth.

Below. The Sisson automatic choke, of the same type that has been used on other Chrysler products, is now used on Plymouth.



PLYMOUTH offers its 1949 line on two different chasses—the 118-inch wheelbase, an increase of one inch; and the 111-inch model, six inches shorter than last year. The deluxe series on the 118-inch wheelbase comprises a club coupe and a four-door sedan; while the special deluxe series on the same chassis carries the club coupe, four-door sedan, convertible coupe, and the station wagon. The deluxe group on the 111-inch wheelbase includes a two-door sedan, a three-passenger coupe, and the Suburban, the latter being a new body type for Plymouth.

While wheelbase has been increased to improve riding comfort, overall length of the car has been decreased. Although narrower and lower the new bodies provide more interior room, sedan seats being five inches wider in front, six inches wider in the rear. Increased visibility is pro-

vided with an increase of 37 per cent in windshield area, 35.4 per cent increase in rear window opening, and with windshield wipers clearing 61.5 per cent greater area.

Engine performance has been improved with

(Continued on page 78)

Plymouth

*offers choice of 111
or 117 in. Wheelbase*

SHOP KINKS

\$25★

FOR THE BEST KINK
PUBLISHED EACH MONTH



A Short Cut to Shop Kinks



In order to get the most use out of each Shop Kink, I open the Motor Age Flat Rate and Service Manual to pages 1 to 6 and mark an X opposite the operation most closely connected to each Shop Kink. Then I get a blank notebook to list the Motor Age issue and page number in which the Kink appeared, allowing four or five pages for each group operation. That way, when quoting the labor prices on a job, I can see if there is a Shop Kink for that particular job, and, opening to the corresponding page in the index book, I find out if there is a kink for that car and where to find it. In the back of the index book I keep a list of "Tools Worth Making." *Lloyd K. Elliott, Elliott's Automotive Service, 50 W. Flower St., Willits, California.*

Masking Tape Helps In Removing Horn Buttons

Some late model horn buttons have to be pushed down and turned slightly to be removed. Due to the slickness of button, its often a difficult job. I find a simple way to get the job done is to wrap masking tape around top of button, which enables you to get traction to remove the button. *Albert M. Hay, 2090 South Street, Beaumont, Texas.*

Oil Filter Case Used To Make Vacuum Reserve Tank

On every car that I ever had, I always had trouble with the windshield wiper stopping when the motor was under a load. I tried to buy a vacuum supply tank, with no luck, so I set out to make one. For the tank I used a large old oil filter (throw away type). I cut it in half and took out the insides, washed it thoroughly and carefully welded it together. Not knowing what to use for a check valve I finally ran across some fitting that I think was used in the old style vacuum tanks for gasoline. They had ball checks in them. If those cannot be found I think a person could utilize an old carb. needle and seat some way. Now my wiper keeps going when I step on the gas. *Edward H. Tonnies, 3331A Minnesota Avenue, St. Louis 18, Missouri.*

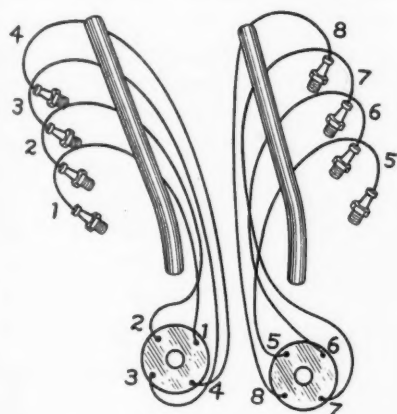


**FOR ALL KINKS
PUBLISHED EACH MONTH**

Installing Plug Wires

On Early V8 Fords

There is sometimes confusion when installing spark plug wires on V8 Fords up to 1941. Here is my system. Each distributor cap has



8 numbers stamped on it. That is, 2 numbers for each wire. You will find in each cap numbers, 1, 2, 3, 4, 5, 6, 7, 8. Stand in front of the radiator and start on the left side and the wire numbers are 1, 2, 3, 4, and 5, 6, 7, 8 down the right bank. *W. L. Andrews, c/o J. F. Stripling Garage, 600 N. 2nd Avenue at Toles Service Station, Rome, Ga.*

Screwdriver and Bit

Make Hose Removing Tool

On many radiator hoses it is very difficult to get the clamp and hose free from the neck. We make it easy by using a cheap screw driver with a $\frac{3}{8}$ inch bit. Heat and bend the bit back, similar to a claw bar and hook. The bit can be pulled or

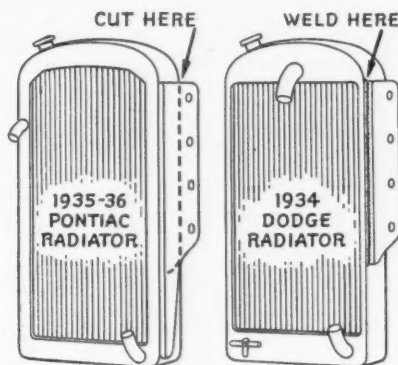
pushed between the neck and hose. Pry out and the hose is loose. *W. E. McCray, P. O. Box 463, Winfield, Iowa.*

Changeover of Radiator

On '35 and '36 Pontiac

I have noticed since I have been working on radiators that the 1935 and '36 radiators clog and boil over more often than regular radiators. I have changed the radiators over on a few 1936 Pontiacs and the results have been very satisfactory.

With a cutting torch cut the side braces off the 1936 Pontiac radiator and braze or weld them onto the side of the Dodge radiator. Take the old goose-neck off and replace with a goose-neck from a 1937 or '38 Pontiac. Lower hose will match the same. Cut away a small piece of the top of the radiator shell where the filler spout is. It is an easy changeover and will give good

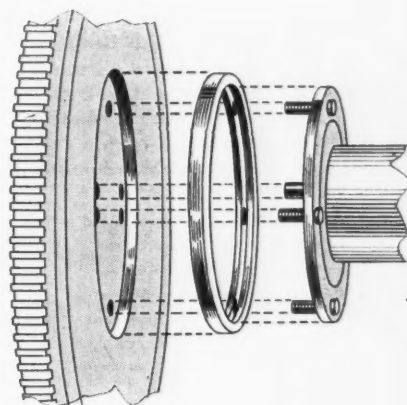


results. *Henry O. D'Alissandro, Mendon Hill Garage, 247 Mendon Street, Hopedale, Mass.*

Standard Dodge Engine

Goes in Army Truck

A customer came in our shop asking if we could install a civilian motor in an Army Dodge truck. Here is



what we found: The only difference was the crankshaft of the civilian motor was shorter and the flywheel rubbed the clutch housing. We machined a plate that would move the flywheel back and give the proper clearance. No flywheel can be purchased that will serve the place of the adapter plate. The plate has to be countersunk to fit over the shaft and inside the flywheel. This assures perfect alignment and balance. This has been working satisfactorily for six months, and I think it will last the lifetime of the truck. We have used this several times and with no trouble. *Willie N. Essary, Essary's Automotive Service, 1400 17th Street, Bakers Field, California.*

CLEARING HOUSE

FOR SERVICEMEN'S QUERIES

By JACK MONTGOMERY • Technical Editor



When you run into a job that has you stumped write Readers' Clearing House. Besides receiving helpful suggestions, you may have the same problem that is baffling someone else. This month we are trouble shooting when:

- Rebores Cadillac has vibration
- Installing overdrive in Dodge
- Increasing power on Cadillac
- Pontiac has poor gas mileage
- Transmission has six overhauls
- Brakes fail after short run
- Plymouth pulls to left on stops
- Ford water pump whistles
- Dodge engine goes in '32 Chrysler
- Installing booster brakes on Ford
- Valves burn on Ford truck
- Packard overdrive wiring diagrams on Page 178

Rebores 1935 Cadillac Has Bad Vibration

I have a 1935 V8 Cadillac that I had rebored, it took 60 thousandths O.S. pistons. Not being able to get the pistons from the Cadillac people, I put in some jobbing house pistons which weighed 6.5 oz. more than the old standard ones removed. There were no new rods or bearings installed, but valves were ground.

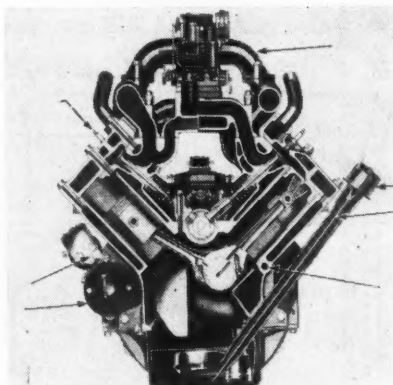
Now the motor has a vibration at around 30 to 40 miles per hour.

Would the heavier pistons cause this, and if so, would a heavier bal-

ancer on front of the crankshaft reduce it?

I will appreciate any information leading to the cause of the vibration. Lee Trowbridge, 1629 S. 10th Street, West, Missoula, Montana.

I WOULD say that if the pistons all weigh the same, the vibration is probably caused by something else. I do not believe that a heavier vibration damper would help this condition. I would suggest first of all that you check the motor mountings for looseness or deterioration. There is also the possibility of the



clutch being out of balance. A quick check on this can be made by adding washers to the clutch cover bolts. Add washers to one bolt at a

time and then test the car to see if the vibration is better or worse. You do not mention in your letter whether the engine will vibrate when it is revved up standing still. I would make this test and that would indicate the vibration is in the engine. Otherwise it could be caused by an unbalanced driveshaft or a faulty universal joint.

Installing Overdrive

In 1941 Dodge

I have a 1941 Dodge with Fluid Drive. Can I install a 1939 or 1940 Chrysler overdrive transmission and keep the Fluid Drive and same rear end? Or could I cut out Fluid Drive and install the solid clutch of 1939 or 1940 Chrysler with OD? In either case would I have to change drive shaft length? Lewis Frazer, Fairlington Service, 4102 S. 32 Road, Fairlington, Virginia.

ACCORDING to the information we have been able to obtain, the 1940 Chrysler overdrive transmission is interchangeable but the 1939 is not.

To make the changeover it will be necessary to change the main drive gear from the Dodge transmission to the Chrysler and everything else will fit perfectly, including the drive shaft.

Increasing Power On 1941 Cadillac 61

I would like some information, if possible, on the following:

1. What is the clocked top speed of a 1941 — 61 Cadillac (standard type shift)?

2. How much can be planed from the cylinder heads without getting into trouble (hitting valves, etc.)?

3. Would 1/32 in. removed from heads raise the ratio to 7.5-1? Dell Cummings, 2351 Harrisburg Pike, Grove City, Ohio.

IN REPLY to your recent letter regarding a 1941 Cadillac. I am sorry I do not have the official top speed of a 1941 Cadillac but I do know they will do 98 m.p.h.

As to planing the cylinder heads, I wouldn't recommend over .060 in. unless you make the following check. To determine the space in the cylinder it will be necessary to make a plaster of Paris cast of it. This can be done by cleaning the combustion area thoroughly on one cylinder. Crank the engine until both valves are closed and piston on top center. With cylinder head in place add the plaster of Paris mixture through spark plug hole until full. When casting has set remove the head and make your calculations. Using this method, metal can be added to the inside of the combustion chamber to increase your compression.

To determine the compression ratio the best method is to have piston on bottom stroke with valves closed. In order to close the valves it will be necessary to remove the lifters. Then with a graduated beaker and a fluid such as kerosene, fill the cylinder through spark plug hole, measuring the exact amount. Then crank the engine until piston is on top dead center and again measure the amount of fluid required to fill. Divide the small amount into the large amount, the result is the compression ratio.

Can Sprung Frame Cause Drag to Reduce Gas Economy

I have a customer who owns a 1941 Pontiac Sedan six cylinder and averages about 13½ miles to the gallon.

Here is what we've done so far:

Installed a new motor that had but 9000 miles and we rebuilt it to manufacturer's specifications, new points, condenser, plugs, a new carburetor was put on and set on a test machine but the same average was the result. The vacuum holds to .21 lbs.

Some time ago this car was in an accident. The frame was sprung quite a lot. The drive shaft measures about ¾ inch closer to the right of the X member, the left wheels are ½ inch closer to each other than the right wheels.

My opinion is that there must be a drag somewhere causing this motor to overwork, thereby using up more gas. Albert Allard, 79 Holden St., No. Adams, Mass.

I WOULD say that after all the work you have done and all the checks you have made, that it might possibly be the driver, himself.

I would suggest that you run a gasoline mileage test on this car by hooking up a test jar and running it over a measured distance to find out exactly what mileage you are getting.

I do not think your trouble is caused by misalignment as a vibration or some tire wear would be sure to show up.

Chevrolet Transmission Overhauled Six Times

We have a 1940 Chevrolet in our shop on which the transmission has been overhauled six times in the past year. Each time it jumps out of high and the synchronizing gear goes out or locks in second. After the second transmission was replaced we put in new gears and case. Then we installed a new drive shaft, bell housing, and motor supports. We even rebushed the rear springs. Could you please tell us what to do? J & M General Repair, Vinson, Oklahoma.

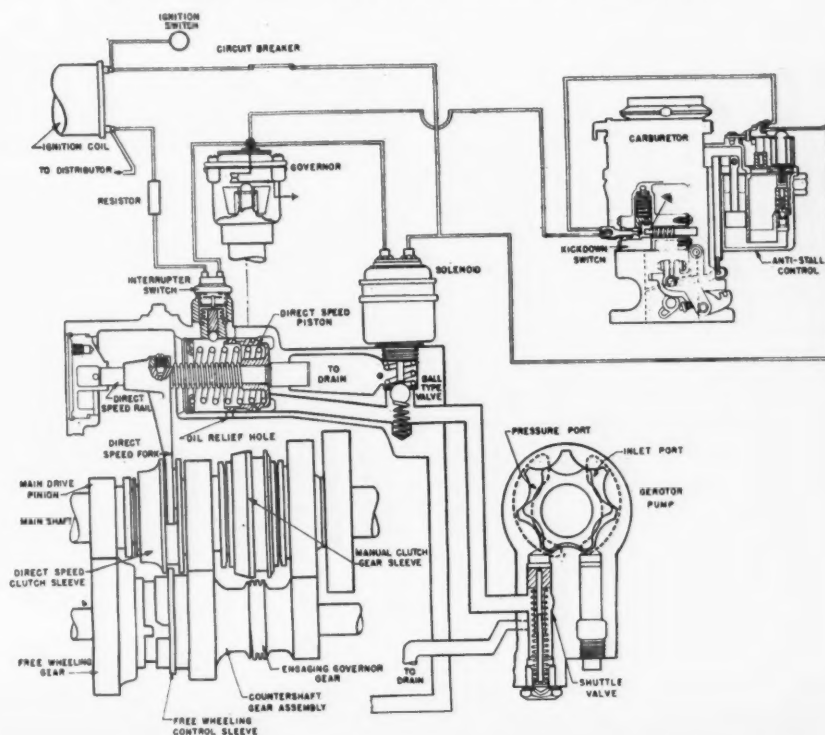
YOU certainly do have a problem on that 1940 Chevrolet. It is hard to understand why this trouble should exist after overhauling it six times.

I am inclined to believe your trouble is coming from your shifter mechanism rather than your transmission. I would suggest you obtain a new shift cover assembly or rebuild the old one. Also, I would be very careful when making the adjustments on the vacuum assist.

I think that if you go over these two items carefully you will find your trouble.

(Continued on page 64)

Wiring diagram of 1949 Chrysler Presto-Matic transmission



Clearing House Continued from page 63

Brakes Disappear After Short, High-Speed Run

I have a 1940 Buick Roadmaster, Series 71. When driving from 30 to 40 miles per hour, my brakes are good. But when I drive 50 to 70 miles per hour in a distance of 4 to 6 miles, I have no brakes at all.

I have honed all brake cylinders and master cylinder, replaced all with the proper cups and kits. I have no leaks of brake fluid anywhere. I have installed new brake linings on all wheels, and everything seems to be in order. After pumping brakes three or four times, after fast driving, my brakes build up until I hit high speed again. Have no brakes at high speed. Can you help me? — Plasestine Repair & Welding Co., Alderson, West Virginia.

I BELIEVE your trouble might possibly be caused by the drums having been turned too often, making them thin and when they get hot they expand too far. Also, I would check the hydraulic lines to make sure they are not touching or near the exhaust system as the head from the exhaust system would make the brake fluid boil and cause you to lose pedal.

Plymouth Pulls to Left When Brakes Are Applied

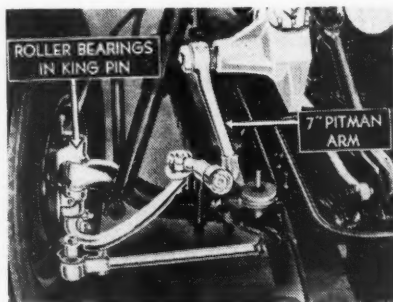
One of our customers has a 1936 P-2 Plymouth on which the left front wheel exerts more braking power than the right. Applying the brakes easily is O.K. with no pulling sideways, but to apply them hard would cause the car to go out of control.

I have done the following with no change or improvement. New wheel cylinders in front and they are the same size, new lines, new hose, new brake shoes, tried two sets of lining, new drums, and set anchor pins with brake gauge. With line to front wheels blocked, rear brakes work perfect, but to block rear line the left front wheel grabs. I have changed wheels and tire rims around. A brake lining represen-

tative said that a weak spring was causing it. I didn't believe it but tried all new springs. I took it to the most reputable frame and front end shop in this territory, but they could find nothing wrong. We had another Plymouth of exactly the same model on which the brakes worked perfect. I took the whole front axle assembly, including wheels, tires and drag link to pitman arm, from this car and installed it in other car, but it was no different. I also inspected the frame carefully for a break that might be changing alignment when under stress.

This is the first one I've seen that couldn't be corrected with enough effort. I would appreciate your information. Wade Erwin, Troyer's Garage, Orrville, Ohio.

A PARENTLY, you have done just about everything to correct this trouble but I am inclined to believe that your difficulty is caused by the steering gear assembly itself.



I would suggest you check the play in this steering gear and if excessive, I would make sure it is all taken out.

You probably know that to remove the play on this type steering it is necessary to remove the sector shaft to remove the shims.

One other thing worthwhile checking is the kick shackle to make sure it is operating correctly and that the springs are not broken.

Ford Water Pump Whistles While It Works

I have a 1947 Ford that developed a whistle in the water pump. After

replacing one pump it ran for 3000 miles without the whistle. It developed the whistle again at 9000 miles and after putting a pint of water pump lubricant in it, it stopped for about another 2000 but has since started again.

I have changed fan belts on both the generator as well as the water pump fan belt, but to no avail. I drained the radiator and as the water became lower (with the motor running) it whistled about twice as loud. The water pump lubricant will only stop it for a couple of days at the most now. Seems that it does not whistle until the water is warmed. Do you have any suggestions? In my experience this is the first V8 that I have had trouble with the water pumps whistling. Ivan O. Stanberry, 126 West "I" Street, Ontario, California.

I WOULD suggest removing this pump and checking the oil feed holes in the block to make sure they are not clogged.

Another simple remedy for this job would be to install some soap in the radiator. Just take a piece of any kind of soap and cut it in chips and let it dissolve in the water.

Installing Dodge Engine In a 1932 Chrysler

We have a 1932 Chrysler six cylinder car that the motor is wrecked. We would like to know if we could use a Dodge or Plymouth motor in it and what year?

How much can we plane a '48 Dodge and Plymouth cylinder head? Schueth Welding Shop, 142 E. Fourth Street, Winner, S. Dakota.

ON your 1932 Chrysler Six on which you would like to install a Dodge or Plymouth engine, I have checked the possibilities for installing a later engine and find that most any later model Dodge or Plymouth engine will fit, providing the engine mountings are changed.

It will be necessary, however, to purchase a complete engine as the starter, distributor and manifold are also different. On 1948 Dodge and Plymouth cylinderheads you can safely plane .070 inch off without getting into trouble.

Installing Vacuum Booster Brakes on 1936 Ford

I would like information on how to devise a vacuum booster on a set of 1936 Ford mechanical brakes. What type of a vacuum booster is best suited for this purpose and how to operate it. Also, I own a 1936 Ford having a three brush generator. Is it advisable to remove the third brush and place in a three unit regulator without damage to the armature or field windings? Or is it advisable to set the brush to the highest output and place in a two unit relay? Robert Verba, 1419 7th Street, Des Moines, Iowa.

IN regard to your recent letter requesting information on a vacuum booster for a 1936 Ford, these can be installed with a minimum amount of work. All that is neces-

sary to do is to attach your booster near brake linkage cross bar and run a vacuum line to your manifold. You can buy a kit for this car and the instructions will also come with it for installing.

As to installing a voltage regulator on your present generator, it will work out all right by removing the third brush.

Valves Burning On 1946 Ford Truck

Can you tell me something about a 1946 Ford truck that we had in our shop? The valves would burn and we gave it six valve jobs inside of three months. We exchanged the intake manifold and gave the valves up to .017. Then he changed the gasoline and used a different brand.

But still the valves were burning. I would like to know what I should do with them. Edwin A. Swanson, R. 1, Box 4, Milaca, Minnesota.

YOU do not mention in your letter whether all the exhaust valves burn or whether it is the same one all the time. If it is all of them there is a possibility that this job is running hot or it is being overloaded. I would also check the exhaust system. If the pipes are squeezed or bent or the muffler clogged it would cause back pressure.

I suggest that you go over the cooling system, also reseal the block, narrowing the seats slightly. When tightening the cylinder head use a torque wrench to secure the nuts evenly. The valve timing should also be checked.

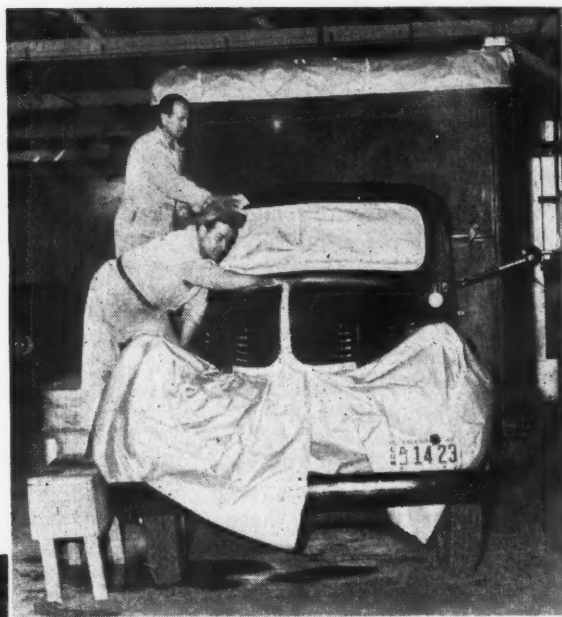
1949 New Car Registrations by Makes by States*

STATE AND MONTH		Buick	Cad- illac	Chevo- rolet	Chryser	Cros- ley	De Soto	Dodge	Ford	Frazer	Hud- son	Kaiser	Lin- coin	Mer- cury	Nash	Olds- mobile	Pack- ard	Ply- mouth	Pont- iac	Stude- baker	Willys	All Others	Total
Alabama.....	January	184	47	275	86	20	86	177	833	21	128	40	54	141	79	142	51	406	139	124	39	9	3,081
Arizona.....	January	84	33	76	38	11	32	36	218	6	67	10	9	42	41	29	23	138	66	78	7	.....	1,042
Arkansas.....	January	133	23	326	55	3	40	115	433	44	76	62	22	51	52	70	43	229	100	85	23	11	1,976
California.....	January	1980	380	1640	593	83	603	1050	3868	72	903	185	260	645	473	1149	408	2615	1223	1007	85	89	19,291
Colorado.....	January	254	57	211	113	5	65	155	468	15	155	30	48	94	53	103	60	291	93	71	10	1	2,357
Connecticut.....	January	449	158	299	127	10	124	290	540	9	118	18	41	124	128	261	89	471	219	137	25	31	3,688
Delaware.....	January	79	26	73	20	8	21	93	164	5	28	6	19	27	17	73	24	94	52	46	9	4	888
Dist. of Col.....	January	198	74	120	68	.....	48	226	341	4	94	9	26	72	56	137	53	342	76	49	10	6	2,010
Florida.....	January	181	89	399	91	28	78	172	782	25	135	43	103	168	80	102	65	348	98	107	40	15	3,149
Georgia.....	January	607	94	689	225	34	176	547	1795	68	345	201	149	356	183	279	141	832	578	288	69	18	7,694
Idaho.....	January	87	10	152	33	.....	31	51	161	29	59	21	15	35	30	28	27	117	78	61	5	4	1,034
Illinois.....	January	1840	589	3148	753	78	686	1682	4001	299	878	391	355	852	650	714	636	2549	1326	695	105	361	22,586
Indiana.....	January	726	133	592	231	41	200	552	1441	62	414	94	70	198	187	420	196	937	205	260	57	3	7,019
Iowa.....	January	389	67	673	159	22	112	302	1316	56	256	135	53	167	134	182	86	715	157	171	18	34	5,204
Kansas.....	January	217	36	349	116	43	80	163	536	51	145	63	47	97	91	132	67	302	118	74	9	7	2,743
Kentucky.....	January	280	41	350	124	16	69	251	692	27	146	54	34	68	47	185	58	448	82	113	34	9	3,148
Louisiana.....	January	285	62	324	85	20	70	236	993	30	179	75	58	159	93	129	68	358	110	157	42	11	3,544
Maine.....	January	126	37	231	47	8	54	118	259	7	75	24	15	40	48	76	35	232	94	54	12	3	1,995
Maryland.....	January	395	89	410	132	20	126	373	783	17	207	26	47	128	110	231	102	790	161	147	30	10	4,334
Massachusetts.....	January	631	201	701	257	25	271	661	1163	22	211	48	64	218	268	563	138	983	331	252	22	27	7,277
Michigan.....	January	2358	684	1610	410	35	360	1196	5214	83	694	126	189	695	556	1158	311	2235	336	385	79	34	16,747
Minnesota.....	January	439	112	747	214	6	114	339	1214	70	206	99	51	128	199	257	114	639	265	223	33	3	5,672
Mississippi.....	January	206	48	321	74	16	67	132	599	16	109	37	42	82	62	78	44	260	104	79	26	11	2,413
Missouri.....	January	572	139	1032	203	31	161	489	1500	43	181	84	63	177	185	295	125	796	292	202	25	15	6,610
Montana.....	January	106	32	243	53	2	38	114	355	32	127	32	18	63	67	64	52	185	91	83	6	5	1,798
Nebraska.....	January	213	43	342	122	9	56	153	784	38	79	51	32	90	56	121	49	444	101	127	13	11	2,834
Nevada.....	January	32	3	60	21	.....	13	14	76	4	26	3	12	18	6	19	15	69	34	39	1	.....	465
New Hampshire.....	January	71	20	103	25	4	23	79	160	3	28	13	7	27	22	38	20	97	40	23	10	.....	813
New Jersey.....	January	1208	333	1200	450	42	343	906	1493	34	424	62	122	337	266	513	270	1345	782	311	59	28	10,528
New Mexico.....	January	102	13	112	48	6	22	75	216	18	40	18	32	34	41	33	21	101	44	39	8	2	1,025
New York.....	January	2594	751	1998	856	61	782	2329	3551	93	820	142	244	654	639	1567	553	2853	1264	620	132	49	22,552
North Carolina.....	January	428	93	622	156	13	124	340	1393	39	234	68	91	202	120	206	140	665	232	191	53	28	5,438
North Dakota.....	January	62	9	236	51	2	36	60	278	26	41	11	50	27	25	40	204	53	53	3	.....	1,308	
Ohio.....	January	1912	433	1333	631	56	511	1303	3400	121	746	171	171	563	553	1097	412	2414	467	545	169	52	17,060
Oklahoma.....	January	159	34	219	63	7	48	136	406	17	89	16	30	72	60	119	49	272	98	42	12	4	1,952
Oregon.....	January	322	53	313	93	22	96	231	637	37	132	64	51	115	104	159	90	493	188	170	18	78	3,466
Pennsylvania.....	January	1704	407	2004	698	50	617	1522	2630	95	578	137	188	468	483	949	441	3076	743	482	105	14	17,391
Rhode Island.....	January	174	51	164	51	3	59	132	221	12	48	7	24	48	54	109	29	196	61	76	9	8	1,536
South Carolina.....	January	191	43	230	84	9	78	153	759	15	106	19	44	108	77	130	44	369	94	82	24	16	2,673
South Dakota.....	January	75	14	212	54	3	27	65	222	41	43	37	29	37	26	35	40	162	61	33	2	.....	1,218
Tennessee.....	January	418	82	552	140	37	135	295	1312	29	217	51	54	153	114	240	97	624	188	211	63	47	5,059
Texas.....	January	1275	306	2261	520	102	377	1030	3490	165	691	207	386	706	315	661	304	1735	722	444	128	111	15,936
Utah.....	January	85	20	120	33	5	24	65	211	11	55	21	10	36	34	37	29	129	75	39	6	.....	1,045
Vermont.....	January	74	8	90	19	6	30	68	140	3	31	12	9	29	21	34	19	94	33	24	5	.....	752
Virginia.....	January	601	100	795	213	22	151	440	1460	48	257	84	62	241	154	280	143	879	367	221	44	39	6,601
Washington.....	January	335	66	440	106	11	133	246	768	27	126	38	26	110	145	205	77	507	159	201	23	29	3,778
West Virginia.....	January	183	31	249	106	8	67	183	415	15	81	27	27	67	61	100	66	339	92	70	23	2	2,212
Wisconsin.....	January	542	122	1437	217	23	191	503	1386	113	266	163	82	216	644	324	143	821	400	223	42	18	7,876
Wyoming.....	January	71	12	89	28	.....	21	33	114	6	43	9	12	23	21	18	15	85	27	30	4	.....	661
Total.....	January, 1949	25837	6308	30172	9092	1066	7675	19881	55191	2143	11137	3354	3607	9271	7937	13896	6122	35435	12719	9232	1776	1260	273,161
Total.....	January, 1948	18073	4351	55090	8621	1449	6946	20335	44896	5443	6595	7410	1728	10110	8459	12148	4152	30311	16428	10211	1886	87	274,978

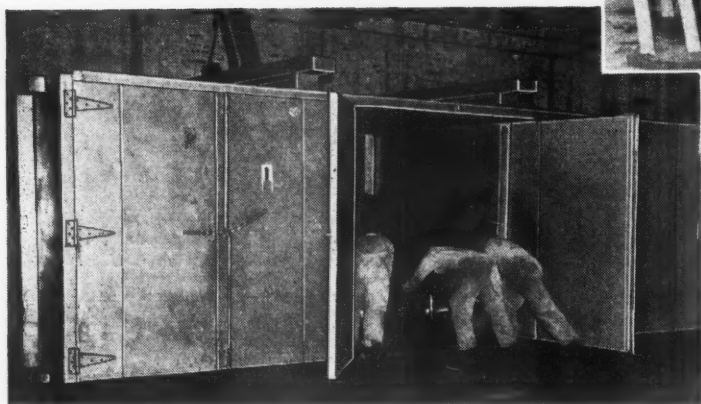
* Data from R. L. Polk & Co.

Quality REFINISHING

... in a Hurry!



Above. Mass production methods speed up the job, each worker being a specialist in his phase of operation.



Left. Steam heated ovens contribute further to the fact that a car can be turned out in six hours, and often less.

Below. The car, in the process of baking after having received the priming coat.



Efficiency is attributed to mass-production methods of using men, materials, equipment

by Thomas A. Dickinson

PELTON MOTORS, of Los Angeles, has developed a setup whereby anything from a midget coupe to the largest bus or truck can be given a first-quality paint job and returned to service in a period of from four to six hours.

Each worker is a specialist, trained to clean, sand, mask, or spray the components of an automobile or truck, and the personnel who are assigned to each new job function as a well-

coordinated team. As soon as necessary cleaning operations are complete, two or more sanders begin roughening the old finish while additional workers mask those areas that require no paint. This permits even the most difficult specimens to be readied for spraying within two hours.

Immediately thereafter, bare metal surfaces are reprimed as necessary with a rapid-dry
(Continued on page 112)



In trucks as well as in cars...

Studebaker's the '49 buy word

*up and down
and across America*

**Studebaker's "broad coverage"
line enables Studebaker dealers to
compete for nearly every car and
truck order in their communities**



MOTOR AGE FLAT RATE AND SERVICE MANUAL DEPARTMENT



Andrew D. Grey

Editor, Motor Age Flat Rate and Service Manual

It Can Be Boiled Down To FLAT RATE

Here's how to set up a standard flat rate price on seasonal cooling system service and be sure that it will pay

SPRING is due to arrive in the customary manner again this year and, unless something is done about it, it will bring with it the usual crop of overheating headaches.

Every shop has had the experience of an overheated car being driven in by an equally overheated customer.

Customer good will can be built up and a nice profit made for the shop on a flat rate basis by stepping in during the early spring to prevent overheating in the late spring. While time required does vary somewhat in the servicing of the different makes of cars, preparing a car for a cool summer operation is perhaps done better on a flat rate basis with a flat charge for all makes. The procedure is very simple.

Drain the cooling system and if a permanent type anti-freeze has been used, save the anti-freeze and return it to the customer with the warning that it is not recommended for use the following year due to deterioration of the rust inhibitor contained in the anti-freeze.

Clean out the cooling system with any good commercial cleaner. Follow carefully the instructions on the container because the manufacturer of the cleaning compound has probably made extensive experiments and knows the best way to handle his product.

Drain out the cleaning compound and thor-

Suggested Flat Rate Price

LABOR CHARGE: \$3.50

MATERIAL:

1 package of radiator cleaning compound

POSSIBLE ADDITIONAL LABOR:

Install new water pumps
Repair radiator leaks

POSSIBLE ADDITIONAL MATERIAL:

Thermostats
Radiator hoses
Radiator clamps
Water pumps
Water pump parts

oroughly pressure back flush the radiator core and the engine block and head.

Remove the radiator hoses for inspection. External inspection of the hoses is not sufficient, they should be removed and the inside examined for cracks, breaks, checks, and swelling. Remove the thermostats and make certain that they will operate so that overheating caused by a stuck thermostat is not likely to happen later.

Replace the radiator hoses and the thermostats. Leaving the thermostats out is not advisable even in summer. A properly operating thermostat will function just as well in warm weather as it will in cold weather.

Examine the cooling system for leaks. A good way to do this is to fill the cooling system and place clean newspapers under the radiator and engine. Let the car stand for a couple of hours and then examine the newspapers for wet spots.

Reset the ignition timing and tighten the fan belt. Road test the car and deliver it to the customer.

Exacting Tests

PROTECT

AMERICA'S FINEST IGNITION SERVICE



Operator is checking impregnated condenser pills for capacity and short circuit after pills have been subjected to excess voltage for leakage and before assembly in case.

ORIGINAL

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The remarkable assurance Auto-Lite parts afford expert service men is proved by this fact: more than half of America's car makers specify Auto-Lite. This approval is based on findings from most exacting tests backed by surveys of results in actual use. To consistently deliver unfailing dependability, Auto-Lite leaves nothing to chance. Every material, every de-

sign, every process is checked and double checked through to the final product. "You're right with Auto-Lite" is more than a phrase. A large part of the businesses that constitute America's great automotive aftermarket rest securely on this firm foundation of Auto-Lite tested quality. To find how Auto-Lite can help you write to

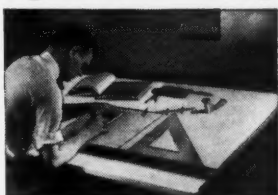
THE ELECTRIC AUTO-LITE CO. • Parts & Service Division • Toledo 1, Ohio
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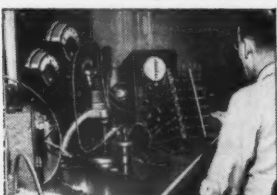
How Ignition Engineering Assures Dependability



RAW MATERIAL TESTS . . . all materials must measure up to predetermined standards before they are released to production.



ENGINEERED SPECIFICATIONS . . . scientifically developed for every part. Nothing left to chance. High quality assures dependability.



CONTINUING IMPROVEMENTS . . . by the foremost engineers working in one of America's great engineering laboratories.



APPROVAL OF LEADING CAR, TRUCK, AND TRACTOR MAKERS . . . as original equipment, after most searching tests by engineers.



FINISHED PRODUCTS TESTS . . . every component and assembly passes repeated tests, checked constantly with laboratory research.

Money cannot buy better Automotive Electrical Equipment

Current Engine and Tune-up Specifications

70

ENGINE				TUNE-UP DATA										STEERING														
Wheelbase (In.)	No. of Cylinders, Bore and Stroke	Taxable Hp.	Piston Displacement (Cu. In.)	Maximum Brake Hp. (with Bare Engine)	Compression Ratio	Spark Plug Make and Type	Rings		VALVES				IGNITION		Caster (Deg.)	Camber (Deg.)	Toe-In (In.)	King Pin Inclination (Deg.)										
							No. and Width	No. and Width	Seat Angle	Inlet	Exhaust	Stem Diameter (In.)	Inlet	Operating Tapet Clearance					Inlet Valve Timing	Deg. Inlet Opens Before or After TC	Timing Marks Located	Breaker Point Gap	Spark Plug Gap	Spark Occurs	Timing Marks Located			
Buick.....Eight, 50	121	8-3 1/2 x 4 1/2	30.6	248.1	115-3600	6.6	AC-48	2-3/4	2-3/4	45	.372	.015H	.015H	.015	13BT	None	.015	•	.025	4BT	Fly	A 7	5 1/2	13	13	13	4 1/2	4 1/2
Buick.....Eight, 70	126	8-3 1/2 x 4 1/2	37.8	320.2	150-3600	8.9	AC-48	2-3/4	2-3/4	45	.372	.015H	.015H	.015	14BT	None	.015	•	.025	6BT	Fly	A 7	5 1/2	16 1/2	16 1/2	16 1/2	4 1/2	4 1/2
Cadillac.....61, 62, 60	(a)	8-3 1/2 x 4 1/2	46.5	331.0	160-3800	7.5	AC-48	2-1 1/4	2-1 1/4	44	.343	.001	.001	.001	19BT	None	.015	31 ±	.035	5BT	VD	A 5	18	18	18	5 5/8	5 5/8	
Cadillac.....Eight, C-47	136 1/4	8-3 1/2 x 4 1/2	46.5	331.0	160-3800	7.5	AC-48	2-1 1/4	2-1 1/4	44	.343	.001	.001	.001	19BT	None	.015	31 ±	.035	5BT	VD	A 5	18	18	18	5 5/8	5 5/8	
Chevrolet.....Six, GJ-GK	116	6-3 1/2 x 3 3/4	29.4	216.5	90-3300	6.6	AC-48-5	2-1 1/2	2-1 1/2	30	.341	.006H	.013H	.006H	1BT	Fly	.021	34	.038	5BT	Fly	A 5	16	16	16	4 ± 30'	4 ± 30'	
Chrysler.....Six, C-45	125 1/2	6-3 1/2 x 4 1/2	28.3	250.6	116-3600	7.0	AL-AR-5	2-3/4	2-3/4	45	.341	.008H	.010H	.014	12BT	VD	.020	34 1/2	.038	4AT	VD	A 5	17	17	17	4 1/2 to 6	4 1/2 to 6	
Chrysler.....Eight, C-46	131	8-3 1/2 x 4 1/2	33.6	323.5	135-3400	7.2	AL	2-3/4	2-3/4	45	.341	.008H	.010H	.014	12BT	VD	.020	28 1/2	.038	2AT	VD	A 5	21	21	21	4 1/2 to 6	4 1/2 to 6	
Chrysler.....Eight, C-47	146 1/2	8-3 1/2 x 4 1/2	33.8	323.5	135-3400	6.7	AL	2-3/4	2-3/4	45	.625	.008H	.010H	.011	12BT	VD	.020	28 1/2	.038	2AT	VD	A 5	21	21	21	4 1/2 to 6	4 1/2 to 6	
Crosley.....Four, CD-49	80	4-2 1/2 x 2 1/2	10.0	44.0	28.5-5400*	7.8	AL-AN7E	2-1 1/2	2-1 1/2	45	.313	.004C	.006C	.009	5BT	.....	.020	46	.025	8BT	Fly	B 2	4	4	4	6 1/2	6 1/2
De Soto.....Six, S-13	125 1/2	6-3 1/2 x 4 1/2	28.3	236.6	112-3600	7.0	AL-AR-5	2-3/4	2-3/4	45	.341	.008H	.010H	.014	12BT	VD	.020	34 1/2	.038	4AT	VD	A 5	17	17	17	4 1/2 to 6	4 1/2 to 6	
Dodge.....Six, D-29, D-30	(a)	6-3 1/2 x 4 1/2	25.3	230.2	103-3600	7.0	AL-AR-5	2-3/4	2-3/4	45	.340	.008H	.010H	.014	8BT	VD	.020	34 1/2	.038	2AT	VD	A 5	15	15	15	4 1/2 to 6	4 1/2 to 6	
Ford.....Six, 98HA	114	6-3 3/4 x 4	26.1	225.8	95-3300	6.8	CH-H10	2-093	2-093	45	.341	.010C	.013C	.015	11BT	VD	.025	38	.030	TC	VD	A 4	17.3	17.3	17.3	5 1/2	5 1/2	
Ford.....Eight, 98BA	114	8-3 1/2 x 3 3/4	32.5	239.4	100-3600	6.8	CH-H10	2-091	2-091	45	.341	.011	.015	.015	11BT	CP	.025	29	.030	2BT	VD	A 4	22	22	22	5 1/2	5 1/2	
Ford.....Six, 48S-49S	123 1/2	6-3 1/2 x 4 1/2	26.3	226.2	112-3600	7.3	AL-A5	2-093	2-093	30	.341	.014C	.014C	.014	10BT	VD	.020	38	.032	4BT	VD	A 5	13 1/2	13 1/2	13 1/2	4 1/2 to 5 1/2	4 1/2 to 5 1/2	
Hudson.....Six, 481-492	123 1/2	6-3 1/2 x 4 1/2	30.4	262.0	121-4000	6.5	CH-J7	2-078	2-078	45	.341	.010H	.012H	.....	7 1/2 BT	Fly	.020	38	.032	TC	Fly	A 7	18	18	18	3 3/8	3 3/8
Hudson.....Eight, 483-494	123 1/2	8-3 1/2 x 4 1/2	28.8	254.0	128-4200	6.5	CH-H10	2-093	2-093	45	.341	.006H	.008H	.....	10 1/2 BT	Fly	.027	38	.032	TC	Fly	A 7	18	18	18	3 3/8	3 3/8
Kaiser.....Six, 491-492	123 1/2	6-3 1/2 x 4 1/2	26.3	226.2	(d)-3600	7.3	AL-A5	2-093	2-093	30	.341	.014C	.014C	.014	10BT	VD	.020	38	.032	4BT	VD	A 5	13 1/2	13 1/2	13 1/2	4 1/2 to 5 1/2	4 1/2 to 5 1/2	
Lincoln.....9EL-9EH	(b)	8-3 1/2 x 4 1/2	39.2	336.7	152-3600	7.0	CH-H10	2-093	2-093	45	.341	.014C	.014C	.014	10BT	VD	.020	38	.032	4BT	VD	A 5	13 1/2	13 1/2	13 1/2	4 1/2 to 5 1/2	4 1/2 to 5 1/2	
Mercury.....9CM	118	8-3 3/4 x 4	32.5	255.4	110-3600	6.8	CH-H10	2-093	2-093	45	.341	.011	.015	.015	10BT	CP	.015	28	.030	2BT	VD	A 5	22 1/4	22 1/4	22 1/4	5	5	
Nash.....Six, 4940	112	6-3 1/2 x 3 3/4	23.4	172.6	82-3600	7.0	AL-A5	2-093	2-093	45	.341	.015H	.015H	.019	6BT	None	.020	35	.030	TC	VD	A 5	14	14	14	5 1/2	5 1/2	
Nash.....Amb., Six, 4960	121	6-3 3/4 x 4 1/2	27.3	234.8	112-3400	7.0	(m)	2-093	2-093	45	.372	.015	.015	.022	4 1/2 BT	None	.020	35	.030	TC	VD	A 5	17	17	17	5 1/2	5 1/2	
Oldsmobile.....76	119 1/2	6-3 1/2 x 4 1/2	29.9	257.1	105-3400	6.5	AC-45	2-1 1/2	2-1 1/2	30	.342	.008H	.011H	.012	5BT	None	.020	35	.040	TC	Fly	A 5	18 1/2	18 1/2	18 1/2	4 1/2 to 5 1/2	4 1/2 to 5 1/2	
Oldsmobile.....88	119 1/2	8-3 1/2 x 3 3/4	45.0	303.7	135-3600	7.2	AC-44	2-1 1/2	2-1 1/2	45	.342	.008H	.011H	.012	14BT	None	.015	22	.030	2 1/2 BT	VD	A 5	21 1/2	21 1/2	21 1/2	4 1/2 to 5 1/2	4 1/2 to 5 1/2	
Oldsmobile.....Futuramic 98	125	8-3 1/2 x 4 1/2	45.0	303.7	135-3600	7.2	AC-44	2-1 1/2	2-1 1/2	45	.342	.008H	.011H	.012	14BT	None	.015	22	.030	2 1/2 BT	VD	A 5	21 1/2	21 1/2	21 1/2	4 1/2 to 5 1/2	4 1/2 to 5 1/2	
Packard.....Eight & Del. 8	120	8-3 1/2 x 3 3/4	39.2	288.0	130-3600	7.0	(k)	2-1	2-1	45	.341	.007H	.010H	.012	10BT	.....	.017	27	.028	8BT	.....	A 6	18	18	18	5 5/8	5 5/8
Packard.....Super Eight	120	8-3 1/2 x 4 1/2	38.2	327.0	145-3600	7.0	(k)	2-1	2-1	45	.341	.007H	.010H	.012	10BT	.....	.017	27	.028	8BT	.....	A 6	20	20	20	5 5/8	5 5/8
Packard.....Custom Eight	127	8-3 1/2 x 4 1/2	39.2	356.0	160-3600	7.0	(k)	2-1	2-1	45	.341	.007H	.010H	.012	4BT	.....	.017	27	.028	8BT	.....	A 7	20	20	20	5 5/8	5 5/8
Playboy.....A48	148	4-3 1/2 x 4	16.9	133.0	48-.....	7.1	CH-J10	2-093	2-093	30	.312	.008H	.008H	.008	5AT	TG	.019	41	.025	TC	Fly	A 4	9	9 1/2	9 1/2	14	14	
Plymouth.....Six, P17, P18	(i)	6-3 1/2 x 4 1/2	25.3	217.8	97-3600	7.0	AL-A4R	2-1 1/2	2-1 1/2	45	.340	.008H	.010H	.014	12BT	VD	.020	36 1/2	.038	2AT	VD	A 5	15	15	15	4 1/2 to 6	4 1/2 to 6	
Pontiac.....Six, 25	120	6-3 1/2 x 4	30.4	239.2	93-3400	6.5	AC-45	2-1 1/2	2-1 1/2	30	.312	.012H	.012H	.012	5BT	CC	.020	37	.025	4BT	Fly	A 5	18 1/2	18 1/2	18 1/2	5	5	
Pontiac.....Eight, 27	120	6-3 1/2 x 3 3/4	35.6	246.8	108-3600	6.5	CH-45	2-1 1/2	2-1 1/2	30	.312	.012H	.012H	.012	5BT	CC	.020	37	.025	4BT	Fly	A 5	20 1/2	20 1/2	20 1/2	5	5	
Studebaker.....Six, 8G	112	6-3 1/2 x 4 1/2	21.6	169.6	80-4000	6.5	CH-J7	2-1 1/2	2-1 1/2	45	.312	.016C	.016C	.020	15BT	FVD	.020	38	.025	2BT	FVD	A 5	10	10	10	5 1/2	5 1/2	
Studebaker.....Six, 16A	119	6-3 1/2 x 4 1/2	25.3	226.2	94-3600	6.5	CH-J7	2-1 1/2	2-1 1/2	45	.343	.016C	.016C	.020	15BT	FVD	.020	38	.025	2BT	FVD	A 6	13	13	13	5 1/2	5 1/2	
Willys.....Six, 663	104	6-3 3/2 x 3 1/2	21.6	148.5	72-4000	6.4	AL-A7-F	2-1 1/2	2-1 1/2	45	.340	.014	.014	.....	5BT	.....	.020	34 1/2	.030	TC	.....	A 5	12	12	12	5	5

Abbreviations: *With Standard Accessories; +At 3/4" Camber; -Do not recommend using a dwell meter for checking point opening.

STEERING: Fly—Flywheel; HA—Hydraulic Automatic Adjustment; TC—Top Center; TG—Timing Gears; VD—Vibration Damper.

IGNITION: BT—Before Top Center; C—Cold; CC—Crankshaft and Camshaft Sprockets; CH—Champion Spark Plug Co.; CP—Crankshaft Pulley; DH—Distributor Housing.

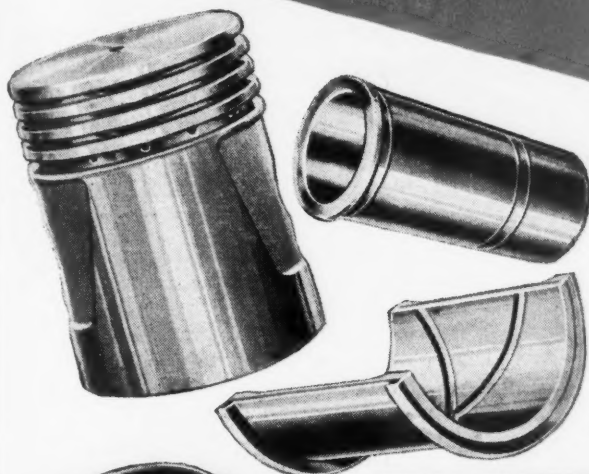
VALVES: Inlet, Exhaust, Operating Tapet Clearance, Deg. Inlet, Timing, Breaker Point Gap, Cam Angle (Deg.), Spark Plug Gap, Spark Occurs, Timing Marks Located, Rods Removed From, Rack Capacity, Cooling System Capacity.

WHEELBASE: (a)—Models 61 and 62—126 in.; Model 60—133 in.; (b)—121 in. for 9EL model; 125 in. for Cosmopolitan model; (c)—Upper Ring 1 1/2 in., Lower Ring 1 1/4 in.; (d)—Model 491—160; Model 492—112.

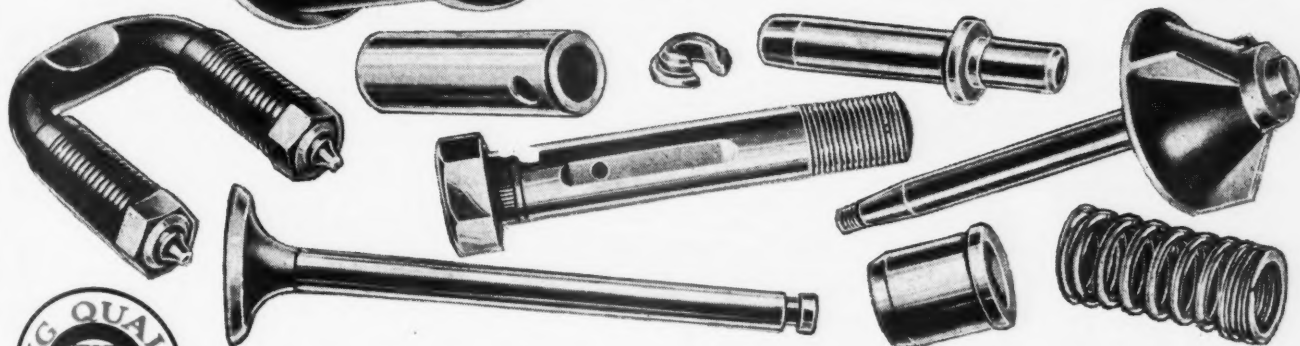
SEAT ANGLE: (a)—Top Ring 1/4; Middle Ring 1/4; (b)—Auto-Lite P4 or AC104 or Champion 4A; (c)—No. 1—093; No. 2—1235; (d)—AC44 or Auto-Lite A5; (e)—Upper 1/2; Lower 1/2.

SPARK PLUG: AC—AC Spark Plug Div.; AL—The Electric Auto-Lite Corp.; AT—After Top Center.

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The King Line includes Pistons, Pins, Motor Bearings, Valves, Cylinder Sleeves, Water Pumps and Parts, Front End Parts and Shackles . . . all in one catalog from one jobber. That's real service!



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PISTONS • PINS • VALVES • BEARINGS • WATER PUMP PARTS
BOLTS • BUSHINGS • SILENT-U SHACKLES • SLEEVES • WHEEL SUSPENSION PARTS

quarters of all U. S. autos are sure prospects for more maintenance in all phases?

Further, doesn't this suggest a long line of trading in new and used cars before the car owner's urge for better transportation is satisfied?

We found these interesting figures in the annual Statistical issue

of *Automotive Industries* which points out that 42 per cent of U. S. cars and 35 per cent of our trucks are 10 or more years old. In fact, the average age of passenger cars in use in 1948 was 8.73 years, in contrast with 5.33 years average age in 1941.

Trucks on the road are older, too. The average age in 1948 was 7.43

years compared with a pre-war age of 5.55 years.

* * *

Count your assets. If you have a clear conscience and a good liver, if you have three good friends and a happy home, if your heart has kept its youth and your soul its honesty—then you are one of life's millionaires.
Iowa Auto Dealers Bulletin.

* * *

January 1950 . . .

Word has been received that the Automotive Service Industries Show which would have been held in Chicago late this year has been called off.

This show generally marked the kick-off for manufacturers' merchandising plans through wholesalers. Jobbers in turn introduced these profit opportunities to service dealers in January.

MOTOR AGE covered the A.S.I. Show thoroughly and made it a part of its annual January Preview issue this year.

To our readers who took time out to say how much they liked the January issue, we're glad to report that another big and factual January (1950) issue is already in the making.

Typical comments on our Pre-
(Continued on page 74)



Camshaft Bearings

REASONABLY good deliveries are now available on Johnson Bronze Camshaft Bearings. New and enlarged facilities plus the return of skilled veterans have made it possible for us to fill most orders from stock. Johnson Camshaft Bearings, like every other item in our line, are made to the highest standard of quality . . . correct in every detail. When properly installed they will deliver the maximum in smooth, quiet, performance for a greater period of time. You can not buy better bearings at any price.

Catalogue

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"Great windshield wiper weather, isn't it?"



"Job Packages"

speed gasket jobs

You never waste time looking for the right gasket when you use an Armstrong-Victor "Job Package." Each "Job Package" contains a complete set of all the cork gaskets you need for any given repair job.

The gaskets in your "Job Package" are easy to install, too. They always fit the parts they're made for. Cut from top-grade Armstrong's Cork Composition, these gaskets give you a dependable, positive seal.

Easy to use, easy to order Armstrong-Victor job packages are available for all makes of cars, busses, trucks, and stationary engines. See for yourself how easy it is to buy and use Armstrong-Victor "Job Packages." Your jobber can fill your needs quickly.



LOOK FOR THE TWO NOTCHES

Exclusive Armstrong-Victor Replacement Gasket Trade-Mark

VICTOR GASKET GUIDE

Victor publishes the most comprehensive Gasket Guide compiled—contains:

1. Factory numbers with Victor numbers.
 2. Special indexing where there are numerous motor models.
 3. Markings to show gasket set contents.
 4. Up-to-date gasket popularity ratings.
- Victor Manufacturing & Gasket Company,
5750 Roosevelt Road, Chicago 50, Illinois



Armstrong-Victor



CORK COMPOSITION GASKETS • CORK SHEETS

view issue read something like the note from Lloyd Edson, Marshalltown, Iowa, which said in part:

"Your January '49 MOTOR AGE is the best publication I have ever read and studied, and I started in the automotive business in 1915."

Mighty glad to hear from Lloyd

and from any other reader.

Doing Business . . .

Doing business without advertising is like winking at a girl in the dark. You know what you're doing—but who the Hell else does?

Automotive Advertisers Council has announced its new, revised

book "More Effective Selling Through Advertising." It's a well thought-out manual showing how automotive wholesalers can benefit by better planning, better coordination and better spending—through advertising.

Who benefits when your jobber advertises? Answer—You.

Who builds profits when you advertise? Answer—YOU!

So—go ahead and wink at the babe in the dark. See where it get's you.



SHAMO THE MODERN AUTO WASH

Cuts car washing time in half . . . Dries spotless, streakless, without wiping.

Now you can double your wash-rack capacity with Shamo—Successor to the Chamois Skin. Shamo dries without wiping, leaves surfaces clean and bright. Contains no soap, kerosene, alkali or abrasives. Shamo is guaranteed not to harm any automotive finishes.

Don't gamble with unknown, untried brands. Stock and sell quality Serco products . . . used by millions of motorists all over the world and *guaranteed satisfactory*.

See your favorite jobber or write today for literature and catalog sheets.



Service Supply Co.

1115 SEVENTH ST. • DENVER 4, COLO.

Cadillac Finds Defrosters

On Windows Satisfactory

Cadillac reports that the front window defrosting equipment which it introduced in its 1949 models is working out very well. The development received very little publicity at the time, but during this past winter has proved to be an excellent innovation. Warm air is conveyed to an aperture at the base of the window through an especially constructed garnish molding built in the form of a duct. When the door is closed, warm air flows from the defrosting duct under the windshield through an opening at the end of the instrument panel directly into the door duct. A rubber gasket at the point of juncture prevents leakage of the warm air. The window defrosters are standard on all models.



"Things kind of slow, eh, Mike!"

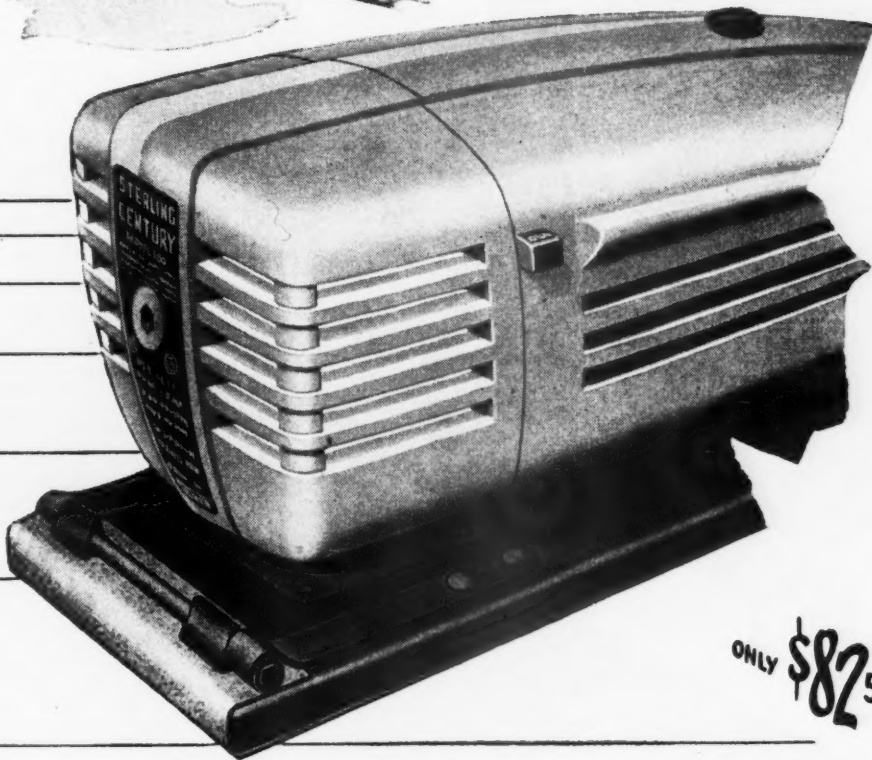
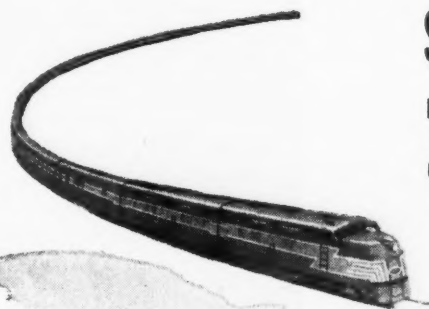
MOTOR AGE, April, 1949

"SPEED, QUALITY, DEPENDABLE SERVICE"

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SANDER by STERLING

Like the famous 20th Century Limited of the New York Central Railroad . . . the new Sterling Century Sander gives you speed, quality and dependable service.



ONLY \$82⁵⁰

Feather-edge, remove lettering, prepare metal surfaces for finishing with the new low cost Sterling Century Sander! Only 4 inches high, the Century gets into those hard-to-reach spots. Weighing only 4 $\frac{3}{4}$ pounds it permits easy, one-hand operation. A powerful, durable tool, built for long, continuous use . . . Sterling performance and quality at low cost! Send coupon for new Century catalog now.

The Century's pad speed is 5000 r.p.m.—plenty of power to assure fastest, most uniform sanding. Pad quickly loads with $\frac{1}{4}$ of standard abrasive sheet.



STERLING TOOL PRODUCTS CO.

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Send me the new Century catalog.

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Sterling . . . Manufacturers of the Century and Model 1000 Portable Electric Sanders and the Speed-Bloc Portable Air-Driven Sander

Hydraulic Brakes . . . Continued from Page 45

Installing and Adjusting the Brakes After Relining

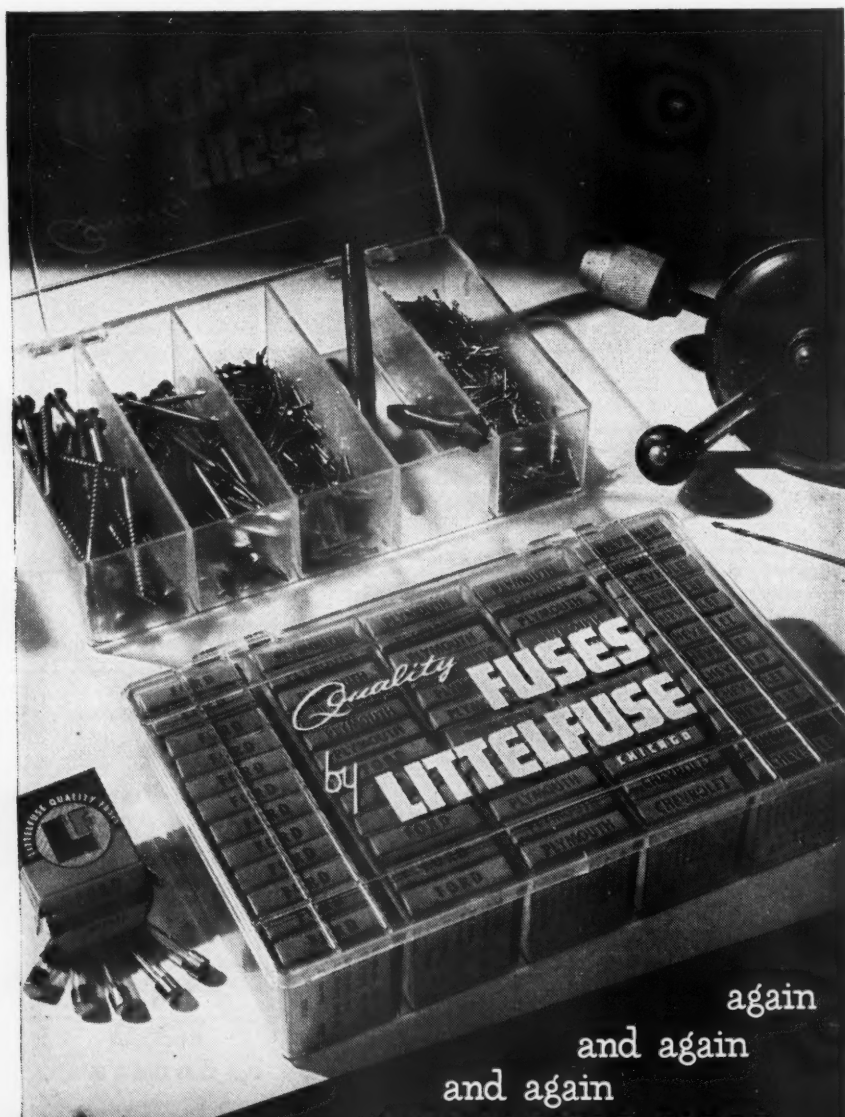
Brake parts should not be lubricated. Before installing brake shoes, fully retract the adjusting wedge while pressing on the contact plug with your finger. Mount the shoes, rotate the shoe adjusting cams to the released position and centralize the shoes.

First adjustment is made manually by setting the forward and reverse cams. Make sure the parking brake is in the released position. Adjust the lining clearance by rotating the cam adjuster away from the wheel cylinder. To centralize the shoes, rotate the drum forward when adjusting the forward cam and rotate backward when adjust-

ing the rear cam. Turn the cam until a heavy drag is felt, then back it off until the drum turns free.

Nash in Good Position On High Compression

Nash is in a favorable position in respect to utilizing its present engine for considerably higher compression ratio if higher octane fuel becomes available, at least so far as its Ambassador line is concerned. The engine is a valve-in-head type and is equipped with bearings between each crank throw. The company already has done considerable experimenting and says that it can successfully go to a compression ratio of 7.3 or 7.4 with the present cylinder head and with alterations probably could go to 7.8 or 7.9. Experiments with an aluminum head show that a compression ratio of 8.5 gives satisfactory performance. Results indicate an increase in horsepower, but no gains in economy. If lower gasoline consumption is required, Nash would have to change the bore and/or stroke or the axle ratio. The current Ambassador engine has been in use in substantially its present form since the early 1930's and if it can be used for compression ratios up to 8.5 to 1, savings in tooling costs will be substantial. So far as the Nash 600 engine is concerned, very little can be done about raising the compression ratio since it is an L-head power plant with four-bearing crankshaft.



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and again
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The new Littelfuse plastic box is packed with 300 fuses packaged "By Car" — five assorted fuses in a box printed with a fuse location chart will service any Ford, Chevrolet, or Plymouth. The new plastic box can also be obtained in the No. 300 assortment — fuses assorted by amperage.

When fuses are sold you have a valuable box with 101 re-uses, such as: parts boxes, first aid kits, fishing tackle kits, stamp and coin boxes.

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And, it doesn't cost a penny more!
Right Now . . . ORDER!



"The nose looks a little bit large."

MOTOR AGE, April, 1949

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the leader in OIL FILTER



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Production



Research

Quality! Here's proof that you can always depend on Famous Fram Oil Filters . . . America's finest! They're proved by over 10,000,000 motorists . . . used as standard equipment by more than 70 leading car, truck, tractor and engine manufacturers. Fram Filters give top performance in removing damaging abrasives and corrosives, offer maximum filtering area and longer cartridge life. All Fram Filters are backed by Fram's unconditional guarantee.

Production! Fram is the world's largest automotive filter producer. Five strategically located plants turn out over 20,000,000 cartridges a year. The savings of this mass production, plus Fram's longer cartridge life, give Fram users extra economy . . . assure them *lowest clean-oil cost per mile*.

Research! Fram laboratories pioneered the first clean-oil type filter, using outside-in flow. Today Fram is carrying on constant research in world's largest and finest oil filter testing lab to bring you new and better filters. At the left are the newest filters resulting from Fram research. Now—and in the future—look to Fram, leader in filter quality, production and research. Fram Corporation, Providence 16, R. I. In Canada: J. C. Adams Co., Ltd., Toronto, Ont.

Complete Engine Protection!

Now Four Great Fram Filters guard engines at every vital point . . . seal out engine-killing dirt, dust, grit, sludge and abrasives where they enter or form.



SENSATIONAL FRAM PRESSURE CRANKCASE VENTILATOR circulates clean air through crankcase to expel "blow-by" as it forms.

REVOLUTIONARY FRAM CARBURETOR AIR FILTER provides positive engine protection, will not pass dust-laden air.

FRAM GASOLINE FILTER removes solids and water from gasoline. Protects finely adjusted modern carburetor mechanisms.



FRAM OIL AIR FUEL FILTERS



To Form a More Perfect Union USE PURITAN GASKA-SEALS

Puritan Gaska - Seals 1, 2, 3, are the gasketing materials that can handle any gasketing job in the automotive field. They enable the service man to form perfect unions that last — with-

standing anti-freeze, low or high temperatures. And when you use Puritan GASKA-SEALS you are making a more perfect union — lasting jobs and satisfied customers.



GASKA-SEAL NO. 1 Hardening Type

Spreads easily. Sticks quickly. Sets hard. Especially recommended for water connections, push rod covers, oil pan, valve plates, transmission, differential housings. Resistant to anti-freeze and high temperatures.



GASKA-SEAL NO. 2 Non-Hardening Type

Spreads easily. Seals tightly but stays soft and pliable—easy to remove. Recommended for head gaskets, crank case assemblies, thermostat connections, oil and gas connections, etc. Resistant to anti-freeze and high temperatures.



GASKA-SEAL NO. 3 Liquid Type

Goes on with a brush. Stays permanently elastic at temperatures from 75°F below zero to 500°F above. Unaffected by gasoline, oil, anti-freeze or other automotive liquids. Use on all types of gaskets from metal-faced to natural rubbers. Use alone where close tolerances are required. Adhesive to all surfaces. Forms permanent seal but makes disassembly easy. Convenient-to-use can with long handle brush.

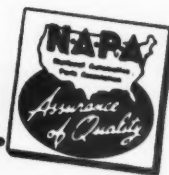
Keep these three Puritan GASKA-SEALS on hand. Each has its specific uses. With all three you are ready for any gasketing job. Order from your NAPA Jobber.



PURITAN COMPANY, INC.
ROCHESTER 6, NEW YORK

HYDRAULIC BRAKE FLUID AND FLUSHING FLUID • GASKA-SEAL NO. 1, 2 AND 3
SHOCK AND KNEE-ACTION OIL

In Canada, F. R. RUSSELL
37 Croydon Rd., Toronto, 10, Ontario



1949 Plymouth

Continued from Page 59

the introduction of a new cylinder head which increases compression ratio to 7 to 1, last year's ratio being 6.6 to 1. The increase in compression ratio coupled with other changes has stepped output to 97 hp at 3600 rpm, an increase of two horsepower.

The engine has a new intake manifold which is said to promote quicker warm-up and faster response to throttle opening. A new automatic electric choke, of the same type used on other Chrysler Corp. cars, has been added. In addition, Plymouth has adopted the combination ignition and starter switch which is standard on all Chrysler Corp. cars. The cable from this switch through to the engine compartment is armored to prevent tampering.

A change has been made in piston ring set-up with the introduction of a chromium plated top ring and improved oil rings for greater oil economy.

The ignition system has been improved with the adoption of the splash-proof distributor, combining a 10,000-ohm resistor in the cap for eliminating interference with radio and TV reception. At the same time this permits use of a larger spark plug gap, resulting in improved idling and better low speed, light load operation.

Adding to safety of night driving, headlights now are equipped with a bulls-eye lens in the center of the sealed beam lens to provide increased light output. A new enclosed circuit breaker, interchangeable with those used on other Chrysler Corp. cars, eliminates the need for replacing fuses.

While the suspension system remains substantially unchanged, better riding is claimed by the use of diagonally mounted shock absorbers at the rear, and increased rebound control in front shock absorbers. Further gain is made by newly designed rubber limit bumpers. The new mounting of rear shock absorbers allows for greater road clearance and reduces side sway by providing greater stability.

A new type of fresh air car heater is offered in three models.

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LINES**

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the-minute — is supplied with United Motors Lines to speed your service operations. Sales and merchandising programs, tailored to the job by men who know their business, help build *your* business. And national advertising backs up your service operations with consistent, hard-hitting campaigns on United Motors Lines.

Add all these advantages up, and you'll see why United Motors Lines put you on your way. Talk it

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ROCHESTER Carburetors
DELCO Hydraulic Brakes

done right. We checked everything, didn't we, Tommy?"

"Yes," agreed Tommy.

"Then it must be somethin' you didn't touch at all," said Pop, scratching his head to cultivate his thought. He looked up as someone joined them. "Oh, hello, Freck. Back already?"

"Yes, sir," said the boy, as he glanced toward Larry. "I knew it'd be fixed as soon as I got back. Snapper here looked as though he might be beating his gums twice in the same sentence."

"Snapper?" asked Pop, puzzled.

"Oh, just a little private joke between us," put in Larry quickly. "A

great kidder, hey, Freck," and he smiled uncertainly.

"Oh," said Pop absently, for he was still really concentrating on the problem. "Say, Larry, did you check the rear brake hose?"

Larry shook his head.

"Better take it off and blow through it. That might be our trouble."

"I don't get it," said Larry. "But I'll take it off." A few minutes later he came out with the hose in his hand.

"Pretty well shot," he commented, then put it up to his mouth and blew. "But it's clear. That couldn't be the trouble."

"Not so fast," said Pop. "Blow through the other end."

Larry tried but his cheeks puffed out and his face turned red as the air just seeped slowly through.

"That's it," said Pop. "The fluid goes through O.K. to put the brakes on, but it can't get out again when you take your foot off the pedal and the rear brakes stay on. Put a new line on, and she's all set to go."

"What makes hoses go bad that way?" asked Freck.

"Several things," said Pop. "Plain old age is the commonest."

(Continued on page 82)

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**IN A
HEAVY
DUTY
JACK**



This man is not wrestling the weight of a heavy truck wheel. The weight of the wheel is carried in the channel of the **DRUM SAFETY JACK**. He did not crawl under the truck to spot the jack—DRUM'S automatic spotting device took care of that. Speed up tire and wheel changes with a **DRUM SAFETY JACK**—approved by leading fleet operators, tire companies and truck manufacturers.

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OOD

Here's What They Say—

"How easy to start! No buttons, no footwork, just a turn of the key does it all."

"I'm sold on Safety Rims. They really hold tires on for safe stops even with a blowout."

"It's beautifull I could read those big dials day or night . . . and never take my eyes off the road."

"Imagine! Fresh air to warm you in winter, cool you in summer and a thermostat you set just like at home."

"No big bills from bumps, dents or even replacement with these easy-to-fix bolt-on fenders."

"Self-opening doors make it so easy to step in or out without fumbling or musing your clothes."

"These seats cradle body weight like a living room chair... wonderful for all day driving."

"The rear-end styling is sensational...and you get more protection from those brighter plastic lights."

"This massive front end looks so sturdy—dependable—and that's Dodge."

"What smart looking window regulators . . . and just a touch speeds windows up or down."

"All the room in the world for luggage . . . with a lid one finger will open and close. Women will love it."

About the Daring **NEW DODGE**

LONGER on the inside . . . SHORTER outside!
WIDER on the inside . . . NARROWER outside!
HIGHER on the inside . . . LOWER outside!

DODGE • PLYMOUTH • DODGE "Job-Rated" TRUCKS

CHRYSLER DIVISION OF CHRYSLER CORPORATION • 7900 JOSEPH CAMPAU • DETROIT 11, MICHIGAN

But using water, or mixing fluids in it by mistake, will do it fast. Actually the hoses should be replaced with every brake job."

Shortly Larry let the lift down and said, "Let's hope that does it, Pop."

"Say, Baldy," said the butcher's boy. "Can I take it now? Then I can finish today's deliveries before

it gets too dark to see."

"Baldy? Me?" said Pop in surprise as he stroked his bald pate. "By golly you're right! Oh well," he added philosophically. "As my granddaddy used to say, 'Grass never grows on a busy street.'"

"That's right," agreed Larry, as my granddaddy used to add, "It can't get up through the concrete."

Dependable Oil Control

Easy
on
cylinder
walls.



BURD
"Super Hi-Speed"
OIL RING

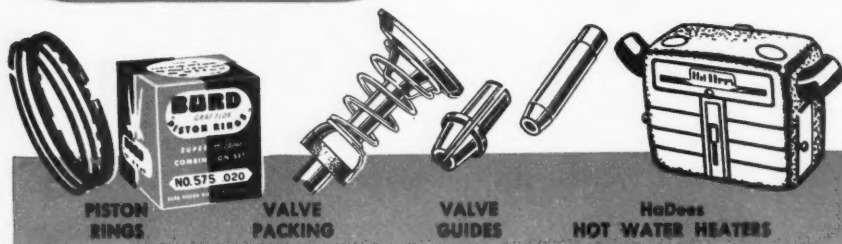
Big-slotted
channel oil ring is
held firmly but gently
against cylinder walls
by well ventilated
expander.

Two steel
segments below the
rust iron ring provide
that necessary extra
scraping action to
insure oil control.



Every motor mechanic knows his customers demand oil control in a re-built job. You can GUARANTEE oil control when installing a set of specifically designed BURD "Super Hi-Speed" Piston Rings. They are ENGINEERED FOR RESULTS. Check these three big exclusive BURD features revealed here. This 4-piece piston ring is scientifically designed to handle the tough oil control problems. BURD'S "Super Hi-Speed" Oil Ring cuts down overhauling costs by eliminating reboring for the price conscious customer. Used in the proper combination with BURD Compression and Oil Rings, BURD "Super Hi-Speed" Oil Rings restore sparkling performance and high efficiency in any engine. See your BURD jobber for further facts.

BURD PISTON RING CO.
Rockford, Ill.



"Come on, Big Dan!"

Packard 25¢ Dividend

Largest in 19 Years

Packard Motor Car Co. has declared its largest dividend in nearly 19 years. The payment of 25 cents a share amounts to \$3.75 million on the 15 million shares of common stock outstanding. During the last year, Packard paid two dividends, one of 15 cents and another of 20 cents.

Manufacturers Promote

Dealers Used Car Sales

With the buyer's market already here for some automobile companies and rapidly approaching for others, manufacturers are taking much greater interest in promoting used car merchandising among dealers. R. R. Nadel, manager of the used car department of Ford, reports that Ford dealers sold 92.6 per cent more used cars and trucks in 1948 than they did in the previous year. Nash recently appointed a used car manager to work with dealers in promoting used car retailing programs. Chevrolet also is planning a much more active program aimed at encouraging and assisting used car retail outlets.

U.S.A. — PACKARD — 440

Why

**make it tough
when it can be so simple**



Use the New Improved
PACKARD FOUR-FORTY
CABLE for all jobs!

The new and improved Packard Four-Forty is engineered to meet every requirement of every vehicle in every climate . . . it is the one cable that permits this standardization on *all* jobs.

With Packard Four-Forty, you can expect—and get—more *miles per replacement*. This is because the balanced characteristics of Packard Four-Forty cable provide greater resistance to heat and cold, to abrasion and moisture, to oil, age and corona.

Start now to simplify your ignition cable stock, and to promote better engine performance and worth-while economy . . . standardize on Packard Four-Forty!



Packard
REG. U.S. PAT. OFF.
TRADE MARK

Packard Electric Division, General Motors Corporation
Warren, Ohio



FOREMOST BUILDER OF AUTOMOTIVE AND AVIATION WIRING

MOTOR AGE, April, 1949

Test Your Business . . . Continued from Page 51

up the monthly check-over and compare one statement with the next regardless of the period intervening. Often it is one year. The repairman who follows these methods cannot test his business efficiency any more than he can test a distributor completely by listening to the engine as the pistons rise and fall.

The repairman who checks one month's figures with the figures of a prior month, or the same month in prior years, gets a piecemeal picture that prevents him from taking a long-term objective of his operations. By using the cumulative figures on a Business Analyzer he considers the totals for the prior 12 months and gets a more reliable

picture because the figures are built up the same way. They are up-to-date and yearly averages, which eliminates extreme fluctuations in any one month. Then, too, the repairman who compares a current month's figures with the figures on a prior profit and loss statement is equally out of focus with reality because his experience figures are usually too old. For example, say that the repairman checks his August, 1949, figures with the figures on his 1948 statement covering the whole year. These figures represent operations going back to January, 1948, about 20 months prior to August, 1949. In the interim, much has happened. Operating costs and ratios have changed substantially. The 1948 figures are too old to serve as dependable yardsticks against which to check the results of operation in August, 1949.

With a buyer's market apparently in the process of development, many things will happen in the coming 20 months so that the figures on a profit and loss statement prepared this month will not be dependable experience figures to use as comparative yardsticks up to the end of 1950.

Inflation, deflation, the shifting of supply and demand one way or the other, keener competition because of more pressure by purchasers for lower prices, basic economic factors such as these
(Continued on page 93)



*Boost Customer Good-Will
and Your Repair Profits!*

WITH

THE *National* LINE Of Quality Automotive Parts

During 1949 you will build greater customer satisfaction by selling the National Line of Quality Automotive Parts. Exclusive features of the National Line eliminate costly major repairs. Your customers' cars can be serviced faster because National Parts and Assemblies are easy to install.

You can recommend National parts with enthusiasm and confidence . . . they are products of sound engineering and precision manufacturing. Tested and proven to the satisfaction of over a million car owners. They are rigidly inspected and guaranteed to be of finest quality materials and workmanship.

QUALITY

- ★ Finest Materials
- ★ Precision Made
- ★ Rigidly Inspected

FOR QUICK, LOW-COST REPAIRS



Pat. No. 2,403,520

DRIVE SHAFT BUSHING & SEAL ASSEMBLIES

Saves Buying New Drive Shaft. Install without tearing down differential. For ALL Chev. Cars & Pick-ups, '30-'48; Pontiac, '33-'36; Most GMC Pick-ups.



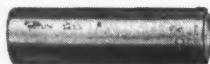
UNIVERSAL JOINT BALL HOUSING KITS

Saves Buying a New Drive Shaft Housing. Repairs Worn Drive Shaft Housing. Stops excessive wear and vibration between drive shaft housing, ball housing and trans. case. For most Chev. Cars & Trucks, '29-'48; most GMC Pick-ups; Pontiac, '33-'36.



"UNIVERSAL" TRANSMISSION CASE BALL SEAT

Saves Cost of a New Transmission Case Assembly. Keeps ball housing in line with drive shaft housing. For Chev. Master '29-'48 cars; Pontiac, '33-'36; Chev. '29-'49 1/2 and 3/4 Ton Pick-ups; Most GMC Pick-ups.



Pat. No. 2,405,541

DRIVE SHAFT HOUSING REPAIR UNIT K-400

Saves Buying New Drive Shaft Housing. Repairs worn drive shaft housing. Prevents damage to drive shaft, "U" joint etc., caused by wear. For Chev. Cars & Pick-ups; Most GMC Pick-ups.



ROCKER ARM SHAFT & BUSHING KITS

Finest Materials, Precision Ground, Rigidly Inspected. Engineered for speed and endurance . . . hard usage and long wear. Longer life assured by most improved method of tempering. For Chev. Cars and Trucks.



CARBURETOR NEEDLES & SEATS

HEXAGON Needle Increases Efficiency. A quality set, where accuracy and performance are big factors in complete motor tune-ups.

There are National Carburetor Needles and Seats for Most Cars and Trucks.

Sold Nationally by Leading Automotive Wholesalers.
Write or wire for full information, Dept. MA-4.

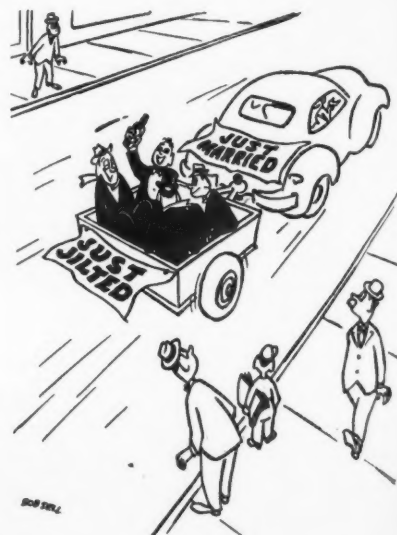


NATIONAL MACHINE WORKS, INC.

AUTOMOTIVE PARTS MANUFACTURERS

P. O. BOX 4305

OKLAHOMA CITY 9, OKLA.



"But Dear, I don't want people to think that I accepted the first man that asked me."

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- Sell*
Willard

CLEVELAND • LOS ANGELES • DALLAS • MEMPHIS • PORTLAND • TORONTO

THE SIGN OF A GOOD DEAL

WILLARD

BATTERIES

on Batteries

There is nothing bob-tailed about the Willard Line. It includes automotive batteries of *several capacity, performance and price levels within each popular group size*. It includes Truck and Bus, Motorcycle, Aircraft and Diesel Starting batteries and a wide range of Stationary, Marine and Industrial battery types and sizes. Willard dealers have a Line that permits them to serve the *entire* battery market.

New



New Willard Tractor Battery

New Improved Seal—Leak-proof—eliminates loss of electrolyte. Reduces terminal corrosion.

New Rubber Insulator—Improves circulation of electrolyte. Firmly supports plates. Reduces wear due to vibration.

New Plate Anchor—Acid proof, molded rubber anchor, holds plates rigidly in place. Improves battery life.

New Rubber Container—Strong, tough, heat resistant. Built to last in severe tractor service.



New Rental Batteries of regular Willard Quality—in all popular group sizes—at special prices.



THE WILLARD LINE



NE IS A *Complete* LINE

THE SIGN OF A GOOD DEAL

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BATTERIES

*On Equipment-
Dry Batteries-
Cables-Wire*

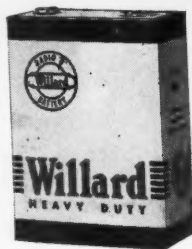
New



Portable
Charger



Medium Priced
Fast Charger



Flat-Pack
67 1/2 Volt
Radio "B"
Battery



Charge Tester

TYPICALLY WILLARD

...in quality

...in acceptance

...in profit



THE SIGN OF A GOOD DEAL

WILLARD

BATTERIES

...in Quality

**40 TO 71%
EXTRA STARTING POWER**

The Master Duty Willard is the quickest starting, longest-lived, most economical battery in the Willard Line. It provides from 40% to 71% EXTRA starting power in any weather.

**19 TO 25%
MORE RESERVE POWER**

The Master Duty Willard is packed with all the power you'll ever need for starting, lighting, ignition PLUS for radio, cigar lighter, heater and other electrical accessories which RESERVE power for 19% to 25%.



Plus

Exclusive Willard "Safety-Fill" Construction to prevent overfilling and eliminate possible under-the-hood damage from acid spray.
• Genuine hard rubber containers and spray insulation for vehicles in normal service or severe, high mileage service. For absolute mastery of all the jobs which batteries do — get your Master Duty Willard now. Sold and serviced by Willard Dealers everywhere.

**Buy a MASTER duty
Willard**

FOR QUICK STARTS • LONG LIFE

WILLARD

The Sign of a Good Dealer

WILLARD STORAGE BATTERY COMPANY
CLEVELAND • LOS ANGELES • DALLAS • MEMPHIS • PORTLAND • TORONTO
A Subsidiary of The Electric Storage Battery Company

Willard research, design and engineering skill have combined to create Willard Quality. Manufacturing know-how enhances it. Rigid inspection protects it. When you sell Willard, you sell quality—built-in quality. Every Willard product is a quality product. Willard advertising tells the Willard quality story.

THE SIGN OF A GOOD DEAL

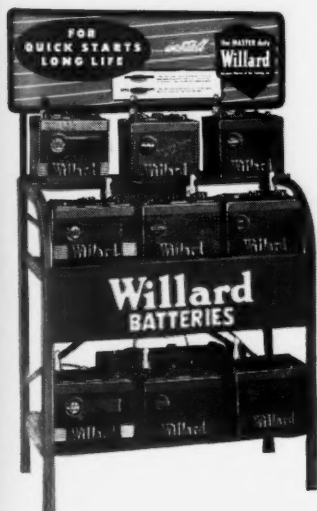
WILLARD

BATTERIES

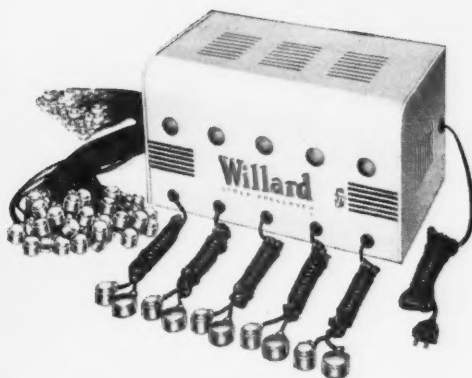
...in Advertising



Ever since 1911, Willard Batteries have been advertised vigorously ... truthfully ... continuously. And they have performed as advertised. That's one strong reason why everybody knows Willard ... and thinks so well of Willard.



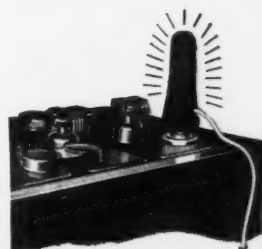
Willard Battery Merchandisers
Assure Attractive Retail Display



The Willard Stock Preserver
Keeps Distributor Stocks Factory Fresh



Local Advertising Material
Effective Point-Of-Sale Merchandising



The Willard Charge Preserver
Keeps Display Batteries Fully Charged

THE SIGN OF A GOOD DEAL

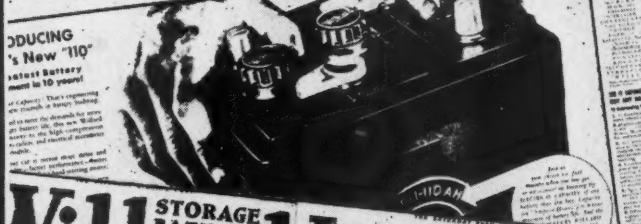
WILLARD

BATTERIES

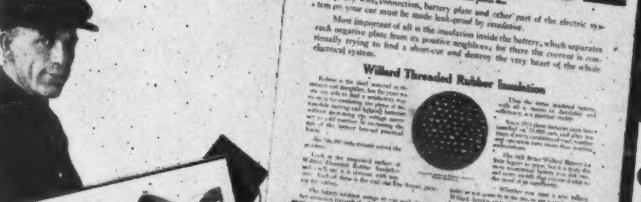
For Good Dealers

The Willard Proposition is closely geared to continuous progress in the quality and appeal of Willard Products. The search for something still better in Willard never stops and never ends. Out of this restless research has come a long series of developments, many of them of such major importance that they have profoundly affected design, manufacturing, and distribution throughout the industry—all of them contributing to the permanence and appeal of the Willard Proposition. The Willard sign is the sign of a good deal—and a good dealer. The ads reproduced here in miniature call attention to a few Willard developments. There were many others . . . there will be many more. See your Willard Distributor today.

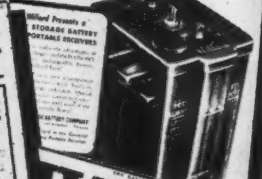
Most Powerful Automobile Battery of its size Ever Built



Willard Insulation



Another Willard First!



Willard Storage Battery



Automobile Lighting Systems



The Electric Cranking System



Self Cranking Battery



WILLARD STORAGE BATTERY COMPANY

CLEVELAND • LOS ANGELES • DALLAS • MEMPHIS • PORTLAND • TORONTO

Test Your Business

With This Analyzer

Continued from Page 84

throw prior costs out of line with current costs, and this fast change of pace must be recorded by an adequate control that is flexible, accurate and as easy to understand as the indicating meter on an analyzer, calibrated for easy reading. The Business Analyzer is the recording gadget that fits these requirements.

The only bookkeeping work that need be done with this recording instrument is to post the books up to the end of the month and take off a trial balance so that the debits and credits are in balance. This is a bookkeeping chore that should be done anyhow so the Business Analyzer does not add to the bookwork. From the books at the end of the month, the repairman or his mechanic can enter the accounts in the columns shown on this form.

The Business Analyzer does not take the place of the monthly profit and loss statement because it doesn't supply the breakdown on the overhead expense, but it does provide a long-term objective on trends, which is not available by means of profit and loss statements, consequently even if the repairman

(Continued on page 94)



Kester Solder 1st choice of mechanics everywhere...



Standard for the Trade since 1899

Kester products have been in constant demand by mechanics for over half a century.

LABORATORY
CONTROLLED

POSITIVE
FLUX
UNIFORMITY

Kester Acid-Core Solder
Kester Plastic Rosin-Core Solder
Kester Radiator Solder (Flux-Core)
Kester Solid Wire and Bar Solder
Kester Soldering Salts
Kester Soldering Paste
Kester Soldering Accessories

Insist upon Kester from your jobber!

The tin-lead content of Kester Solder was established many years ago by you, the trade, as the alloy that would give the best results. Do not accept substitutes.



**KESTER
SOLDER**

KESTER SOLDER COMPANY

4201 Wrightwood Avenue, Chicago 39, Illinois

Factories Also at

Newark, New Jersey • Brantford, Canada

Test Your Business • • Continued from Page 93

does receive a statement regularly, he should also utilize a Business Analyzer. Those repairmen who do not prepare statements monthly or quarterly will find that the Business Analyzer is a good substitute.

In some cases, the cumulative trend figures on the Business Analyzer will give a more accurate figure on overhead expense than

the figures on a profit and loss statement. This is because many expenses that should be prorated, such as depreciation, insurance, taxes, mortgage interest, and so forth, are charged up in the month they are paid and this distorts profits and ratios for the period. Good accounting demands that such expenses be allocated evenly over

the year, 1/12 chargeable each month. On a Business Analyzer, this takes place automatically.

Overhead must be watched very carefully from now on. Because overhead expense is not likely to drop as fast as prices in a buyer's market, the repairman must watch the overhead ratio to sales, not just the monthly ratio, but the over-all trend from month to month, to make sure that it is not getting out of bounds, that the average for the prior 12 months is in safe ratio to sales and leaves the desired net profit. The repairman who can keep his overhead ratio to sales from increasing, or who can decrease it somewhat, is in a good position to weather a buyer's market and come through with a satisfactory net profit. The Business Analyzer will flash the red immediately if the ratio gets out of line.

Maintaining your financial accounts in good condition is a requisite of good management. However, the repairman should keep some auxiliary records to do a thorough job. He needs a budget, job costing forms, stock control cards, inventory sheets, petty cash slips and forms of some kind to make original recordings of cash taken in and credit extended to purchasers. The Business Analyzer is just another auxiliary form that the repairman needs to guide him in managing his business with maximum efficiency.

A Business Analyzer can save you a lot of time in analyzing business. (Continued on page 96)

DORMAN

No. 777 BODY SERVICE ASSORTMENT

STOCK No. CLEARLY MARKED!

ILLUSTRATIONS LITHOGRAPHED IN ACTUAL SIZE!

OVER 700 SCREWS IN ALL-STEEL KIT!

30 DIFFERENT TYPES & SIZES!

THE DORMAN BODY SERVICE ASSORTMENT No. 777 is a complete assortment of sheet metal screws designed to meet the needs of auto body shops, large garages and fleet maintenance repair shops. This kit contains over 700 sheet metal screws of 30 different types and sizes. The container is made of heavy steel with each size and type of screw in individual sections. A diagram showing the position, stock number, exact dimensions and type of head is in clear view when the assortment is open. All illustrations on this diagram are reproduced in life size so anyone can quickly determine the exact size and number of any popular sheet metal screw. For your convenience, refills for this Assortment are now available in handy Dorman Ready-Paks.



"Got a pencil?"

"VIBRO-CENTRIC" — FIRST CHOICE

REGISTERED TRADE MARK



"VIBRO-CENTRIC" 1ST in VALVE SEAT GRINDING!

Black & Decker "Vibro-Centric" Valve Seat Grinder puts a mirror-finish on any valve seats, hard or soft. Turns out perfect results with only a few seconds grinding per seat. Gets it right the first time.

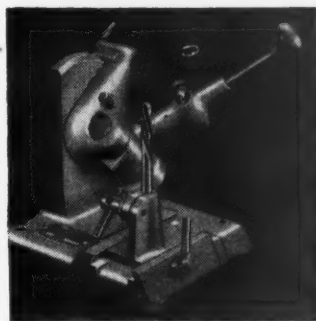


SUPER-SERVICE 1ST in VALVE REFACING!

Black & Decker Super-Service Valve Refacer quickly grinds an absolutely smooth surface and factory-accurate angle on valve faces. Grinds valve stems and tappets for exact clearance.

1ST in STONE DRESSING!

Black & Decker Heavy-Duty Stone Dressing Stand combines *speedy* adjustment and operation with *absolute* accuracy. A *must* for "production" valve reconditioning!



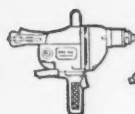
for Finest, Fastest, VALVE RECONDITIONING!

Timesaving—cost-cutting—absolutely accurate—that's the quality-built Black & Decker Valve Reconditioning System! These tools give you feature after feature that saves you money while turning out *perfectly matched* valve jobs. And their easy, fool-proof operation improves the work of even an unskilled operator. Call your nearby Black & Decker Distributor today for free demonstrations. See why thousands of garages, engine rebuilding shops, tractor shops, truck and bus fleets have made Black & Decker tools their *first choice* for years. Write for free, detailed catalog to: The Black & Decker Mfg. Co., 627 Pennsylvania Ave., Towson 4, Maryland.

LEADING DISTRIBUTORS  EVERYWHERE SELL

Black & Decker

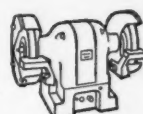
PORTABLE ELECTRIC TOOLS



ELECTRIC DRILLS



PORTABLE SANDERS



BENCH GRINDERS



PORTABLE GRINDERS

Test Your Business . . . Continued from Page 94

iness figures. The repairman who begrudges the time spent on this office work because it takes him out of the shop should enlist the aid of this recording gadget at once. It keeps the repairman informed about his managerial effectiveness without poring over many different profit and loss statements, or book accounts for different periods, in order to get a line of what the

business is doing and how the current results compare with prior periods. Only when a Business Analyzer shows that operating ratios are going too far off the beam need the repairman make a detailed analysis of his book figures to find out the reason. Otherwise this business tester should be a satisfactory instrument for analyzing results accurately and speedily.

ANOTHER *National* LEADER GARAGE TOOLS

BUSHING REMOVER and REPLACING SET

HERE is a most complete bushing driver set, designed to handle all passenger car bushings and a large percentage of truck and tractor bushings. This set includes three retaining bodies with nuts and seventeen driver adaptors giving seventeen sizes, packed very compactly in a steel case. No garage or repair shop is complete without a set of these time saving tools. Available at your automotive jobber—if out of stock write directly to factory giving name of your jobber.



Bushing Driver Set No. 875

All outside diameters in this bushing driver set are perfectly true with each other. These tools are turned from high grade steel, heat treated and tempered for a long life of hard usage and are guaranteed against defects in workmanship or materials. Cadmium finish.

"Always A Step Ahead With Tough Tools for Tough Jobs"
National Machine & Tool Co. Inc.
JACKSON, MICHIGAN, U. S. A.

Edison Buys Indiana Plant For Battery Production

Thomas A Edison, Inc., has purchased a plant in Bremen, Ind., for the manufacture of lead-acid automotive batteries, according to an announcement by Mr. Benjamin F. Morris, vice-president and manager of the company's automotive division.

The new 52,000 square foot production facility will supplement and perhaps eventually double present production at the company's Kearny, N. J., plant. Immediate plans call for a forty per cent increase in production of Edison automotive batteries starting in the fall.

Wayne Mfg. Co. Is New Name of Salsbury Motors

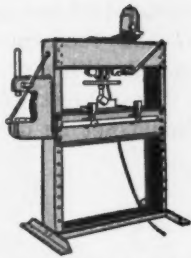
The legal change in name of Salsbury Motors, Inc., to Wayne Manufacturing Co., became effective on January 1 of this year.

Under this new name, the Wayne Manufacturing Co., located 35 miles east of Los Angeles at Pomona, will continue to manufacture Salsbury Motor Scooters, Salsbury Engines and Wayne Motor Street Sweepers.

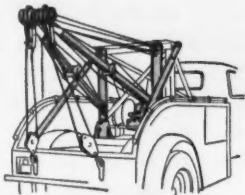
The factory is located on a 12-acre site and contains 87,000 square feet of floor space. The change in name in no way indicates change in ownership or a break in manufacture.



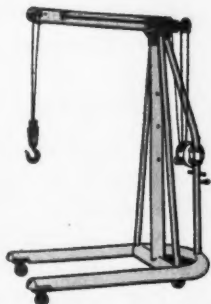
"Our neighbors are chipping in to send her abroad to study for an indefinite period of time."



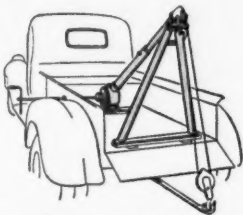
HYDRAULIC PRESSES



WRECKING CRANES (8-Ton)



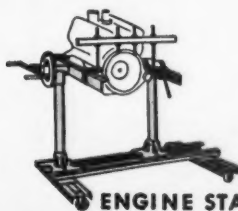
FLOOR CRANES



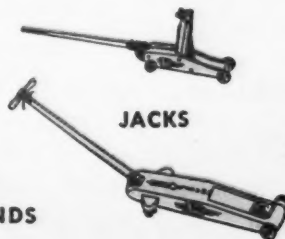
WRECKING CRANES (3-Ton)



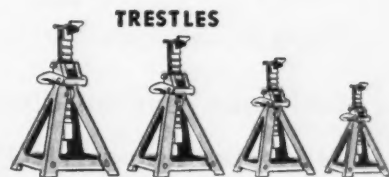
CHAIN HOIST
TRESTLES



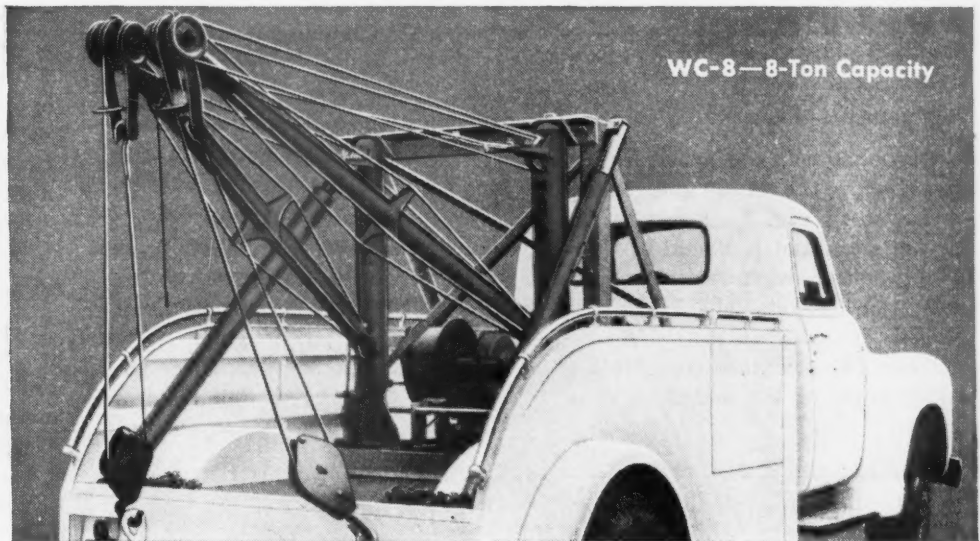
ENGINE STANDS



JACKS



TRESTLES



WC-8—8-Ton Capacity

MANLEY WRECKING CRANES

● There are four of them—each a winner in its class. **WC-8—8-Ton Capacity:** Double booms operate individually or as a unit from power take-off. Automatic drag brake when reeling—special drag brake when hauling. Controls at side or in rear. Out-riggers available as an accessory. Large frame welded into complete unit, independent of truck chassis. **WC-4—4-Ton Capacity:** Same construction as WC-8 except single instead of double boom. A high quality wrecker, suitable for city and quick pick-up work when mounted on light truck. **WC-3—3-Ton Capacity:** Compact. Mounts on any open truck. Folds out of the way. Weighs only 320 pounds. Hand-operated, 100 to 1 reduction. **WCJ-3**—Same as WC-3 with slight change in dimensions to fit Jeep body. ● Like all Manley Automotive Service Equipment, these Wrecking Cranes are sold only through Automotive Jobbers.

● Shown here are a few of the many minute-and-muscle-saving items offered by Manley. Investment in good Manley Equipment pays off—over and over again.

ACCO

York, Pa. • Chicago • New York • Portland • San Francisco • Bridgeport, Conn.

**MANLEY DIVISION
AMERICAN CHAIN & CABLE**

The Best Equipped Shop Gets the Profitable Business

**MANLEY
Automotive Service
EQUIPMENT**



TRADE
MARK

Replacing Bellows

After the coil and armature are free, remove the screws and gaskets as shown in Fig. 3. Faces on the casting at A and B should be thoroughly clean when reassembling, and new gaskets should be installed.

When the armature contacts are badly worn, or the armature is in

bad condition, replace the armature and the contacts as a unit. (See Fig. 4.) For best results, the armature, magnetic core and bellows should be accurately aligned as shown in Fig. 4. A special tool is provided by the Autopulse Corp. Insert the centering gage A in magnetic core as shown. Place the armature flat on top of magnet B

so that the armature is free on the centering tool and the tool is free in the core hole. Hold the units in this position and reassemble the armature and coil. When these are installed in the correct relationship, they should not be disturbed in any way.

Adjusting Contacts

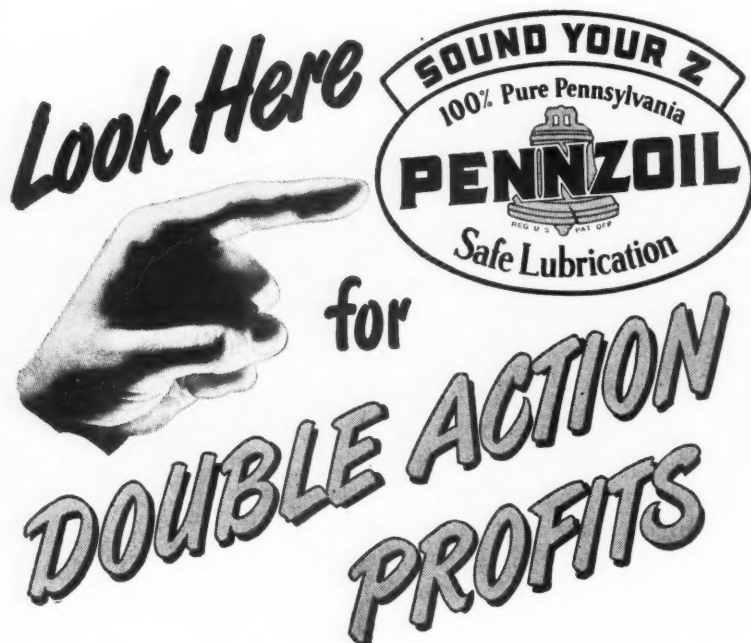
Remove the armature centering tool and with the drive screw assembly still removed, check the contact gap at C as shown in Fig. 4. While holding the armature down at point D and the spring at point E, contact gap (C) should be .020 inch.

When the armature is held down at point (D) with the breaker spring free, the gap should be .040 inch. Adjustments should be made by bending the breaker spring with long nosed pliers. Assemble the drive screw to the armature.

Assembling the Pump Units

After aligning and assembling the armature and coil and adjusting the contacts, complete the assembly as follows: Assemble the coil and armature unit to the bellows ring (A) Fig. 5. Press armature plate flat against the coil head and install the drive screw into bellows stud until the bellows just

(Continued on page 102)



Find out about the PENNZOIL PROPOSITION.
Help your profits two ways. It's the hottest thing in the industry!

Call your Pennzoil distributor . . . or write to us for his name... NOW!

THE PENNZOIL COMPANY • Executive Offices • OIL CITY, PA.

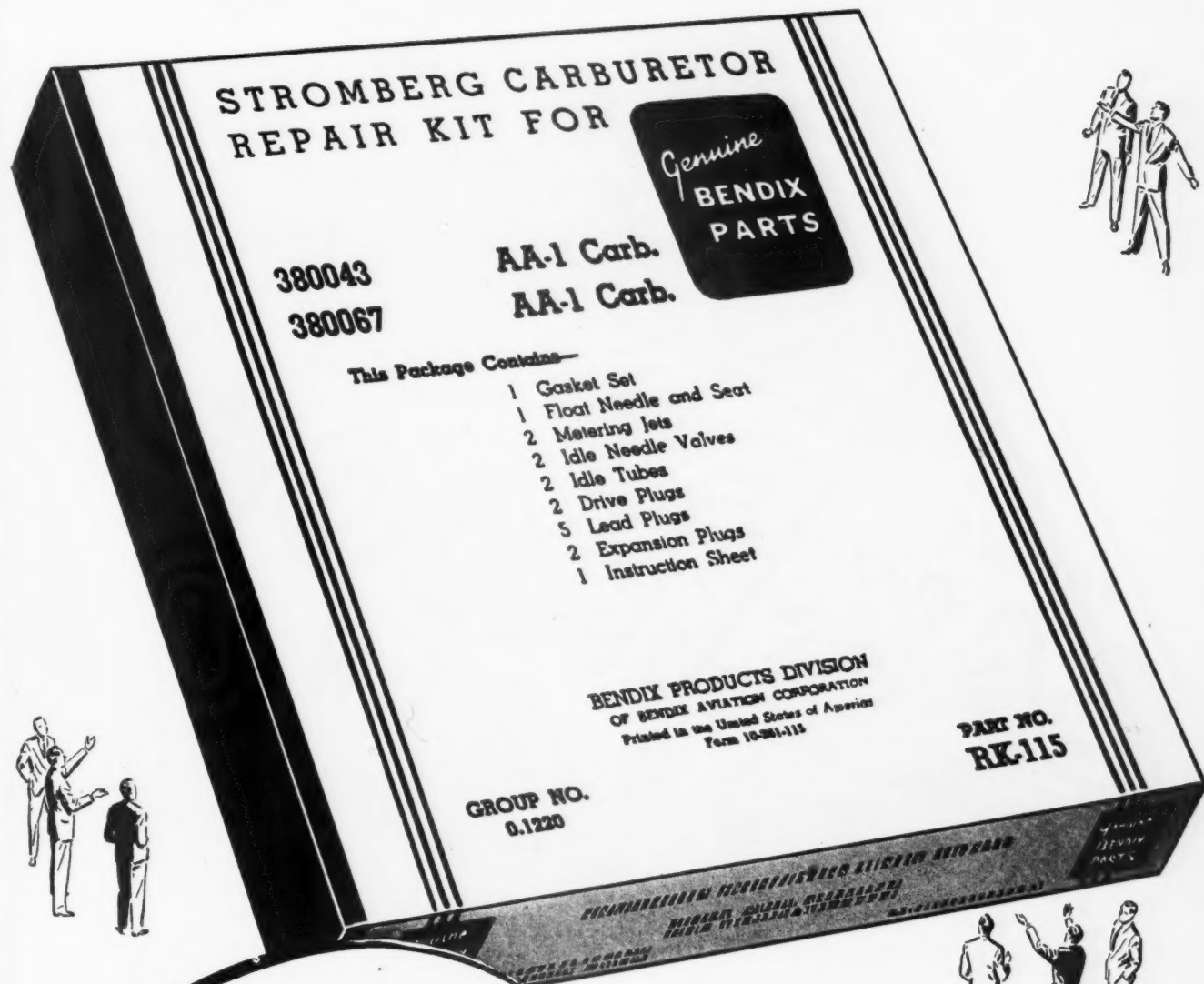
*Trade-mark Registered

Member Penn Grade Crude Oil Ass'n., Permit No. 2

PENNZOIL® MOTOR OIL & LUBRICANTS



"TIMBER!"



**For
BIGGER and BETTER
Stromberg
Carburetor
Service...**

Use The

**STROMBERG
CARBURETOR REPAIR KIT .**

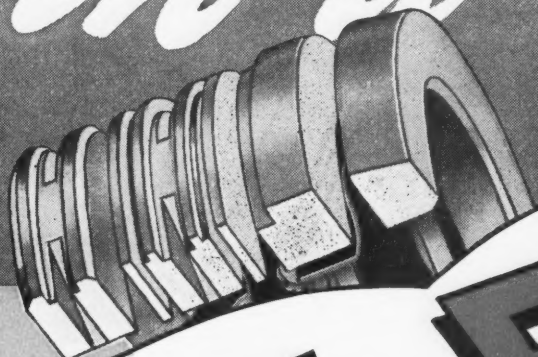
● When you service a Stromberg* carburetor, be sure you always use a Bendix Stromberg Repair Kit. You'll find everything you need in this compact, convenient package!

*REG. U.S. PAT. OFF.

BENDIX PRODUCTS DIVISION of
Service Sales: South Bend, Ind.
Standard Equipment Sales: Elmira, N. Y.



in a CLASS



GENUINE

LEAK-PROOF PISTON RINGS

REG. U. S. PAT. OFF.

Guaranteed TO DO ALL (4)

- (1) Keep oil down
- (2) Keep power up
- (3) Give smooth, new motor operation
- (4) Give longer life

Yes
GUARANTEED
... guaranteed to give satisfactory performance for 10,000 miles or one year, whichever shall occur first, under the McQuay-Norris LEAK-PROOF Piston Ring Replacement and Labor Guarantee available upon request.



THAT PHOSALLOY
TOP RING RATES
A 100% WITH ME



LEAK-PROOF
THEY KEEP THE
"COMEBACKS" OUT

A NEW PRODUCT OF McQUAY-NORRIS

by itself



Outstanding in design and performance, smart mechanics everywhere rate LEAK-PROOF pistons "A" Plus. Speak up for Genuine LEAK-PROOF Piston Rings every time and you'll make more money — more completely satisfied customers.

... And Remember, LEAK-PROOF is bound to be at the head of the class with your customers because of the powerful and consistent consumer advertising McQuay-Norris puts behind it year after year.

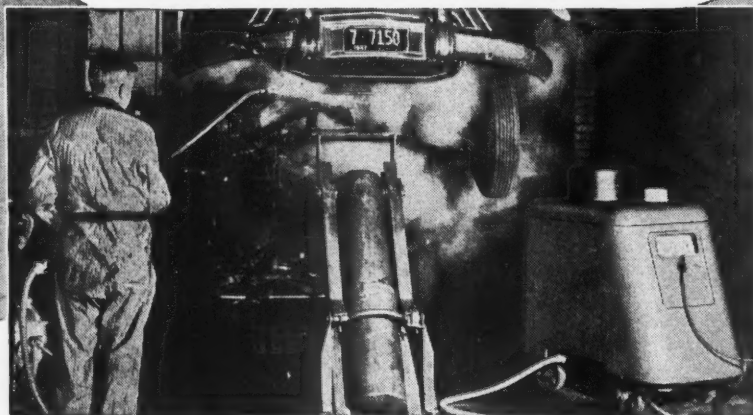


MANUFACTURING CO. ST. LOUIS 10, MO.

starts its downward movement. After releasing the armature, tighten the locknut. Insert the drive spring, adjusting screw and locknut. Install the pump in a test stand and make the final adjustments. If a test rack is not available mount the pump so that the inlet is two feet above the fuel con-

tainer. Turn on the current. The pump should race and be noisy until fuel is picked up. When fuel is delivered, close the outlet. The pump should now stop stroking but if it continues even slowly, it indicates leaky valves. Adjust to 2¼-2¾ pounds pressure by turning screw (E) as shown in Fig. 6.

"HYPPRESSURE JENNY SAVES 90% OF OUR TIME formerly wasted cleaning by hand"



We know that the above unsolicited statement by a garage owner is true because time studies, and thousands of users have proved that Hypressure Jenny cleans 10 times faster, and better, than you can clean by hand.

Hypressure Jenny steam cleaning before repairs, saves up to 40% of the time mechanics ordinarily waste wiping oil and grease from tools and equipment. Figure it out in dollars and cents, and you'll see why Hypressure Jenny will pay for itself within the first few weeks.

A Full-Powered, All Purpose, Heavy-Duty Hypressure Jenny is available from \$445.00 to \$595.00. JO Deluxe Model shown.

Besides saving you money, Hypressure Jenny will make you extra profits flushing cooling systems . . . cleaning motors and chassis . . . preparing cars for undercoating, and by performing dozens of other profitable customer services.

In addition Hypressure Jenny will keep your floors, walls, windows, lifts, grease pits, lavatories, etc., clean as a pin . . . reduce fire hazards . . . lessen your insurance risk.

MAIL TODAY

Fill out this coupon for a FREE SURVEY of your cleaning requirements and an estimate of the SAVINGS you can make with Hypressure Jenny. No obligation.

**HYPRESSURE
JENNY DIVISION
HOMESTEAD VALVE
MANUFACTURING CO.**

"Serving Since 1892"
Coraopolis, Pa.

REQUEST FOR SURVEY

Hypressure Jenny Division,
Homestead Valve Manufacturing Co., P.O. Box 95-D Coraopolis, Pa.

We employ mechanics on repair work.

We overhaul or recondition ☐ cars, ☐ trucks, ☐ buses each month.

We paint ☐ cars, ☐ trucks, ☐ buses each month.

We wash approximately ☐ cars, ☐ trucks, ☐ buses each month.

We are interested in cleaning ☐ floors, ☐ walls, ☐ windows,

Based on above facts, please show us the savings or extra profit Hypressure Jenny can produce.

Company

By Title

Address

City State

Bear Undertakes National Advertising Campaign

An intensive advertising and promotional campaign has been undertaken for 1949 by the Bear Manufacturing Company, of Rock Island, Ill., to establish the Bear shop as an auto safety headquarters in the home community.

The promotion will tell Bear shop owners that "it is just good business to sell safety." In the Bear National Advertisements, Bear shops displaying the Bear Sign will be described as "The Garage Man Who Displays This Sign is a Leader for Safety in Your Community—You Can Depend on Him!"

The 1949 Bear Campaign is divided into three sections. The first section, which features Spring Steering Check-Up, extends through the months of March, April and May.



"Quick, Watson—the needle!"

Duluth Dealers Ass'n Elects Officers

The Duluth Automobile Dealers Association elected the following dealers at their annual meeting last week:

Vern Sell, of Howard & Sell, Inc., Oldsmobile dealers, 1402 E. Superior St., was elected president succeeding Harry T. Priest. H. J. Oltmanns, Lakeland Motors, Inc., Hudson, 749 E. Superior St., and George Tormoen, Tormoen Motor Sales, Willys, 701 E. Superior, were both retained as secretary and treasurer respectively.



Before—hose in hard to handle condition.

EASY PICKING!

Now—Weatherhead
Random Hose
Packaged for Quick,
Easy Picking



After—hose packed for easy picking.

We couldn't improve the hose, so we improved the way to handle it—through time saving, stock controlling packaging. Weatherhead takes random length hose out of cluttered drawers, off mixed-up shelves, and packs and labels it for quick picking. Note the handy port hole for picking in the top of the sturdy box.

Ask Your Jobber About Weatherhead Random Hose Now Packed for Easy Picking!



Look Ahead With

Weatherhead

THE WEATHERHEAD COMPANY, CLEVELAND 8, OHIO

Plants: Cleveland, O. Angola, Ind. Columbia City, Ind. St. Thomas, Ontario, Can.

THE ONLY COMPLETE LINE OF ORIGINAL EQUIPMENT PARTS

Patented Inverted Flared Tube Fittings • S. A. E. Flared Tube Fittings • Compression Tube Fittings
Pipe Fittings • Q. A. Re-usable Hose Fittings • Hydraulic Brake Fittings • Dash Controls
High Pressure Grease Hose • Flexible Hydraulic Brake Hose • Flexible Fuel Line Assemblies
Universal Adapters • Patented Drain & Shutoff Cocks

was the disposition of visiting jobbers to place orders and make contracts, according to Al H. Eckdahl, president, Pacific Automotive Show, Inc., and owner of Eckdahl Motor Parts Co., Inglewood, Calif. He predicted good business in replacement parts and equipment for the balance of the year. He said that the 50,000 automotive tradesmen

who attended are proof positive that the eleven western states form the fastest growing automotive market in the country.

Eckdahl pointed out that recent Dept. of Commerce figures show population increases in ten of the eleven western states: California, Oregon, Washington, Arizona, Utah, Nevada, Idaho, New Mexico,

Colorado, and Wyoming. For the three coastal states, California, Washington, and Oregon, the department reports increases of 45.2%, 43.3%, and 49.2% respectively since 1940. In all, the eleven western states have the highest percentage of motor transportation and equipment per capital in the country.

The spirit of the show was strictly business. The general public was not admitted. The pattern of the show followed closely that set up by the Southwest Automotive Show. Manufacturing exhibitors and sponsoring jobbers held sales conferences from 10 a.m. to 2 p.m. The show was open to the automotive trade during the balance of the day and evening.

Three hundred automotive manufacturers occupied the 450 booths. In fact, the original plans for the show called for only 307 booths. However, the enthusiastic acceptance of the automotive manufacturing industry required erection of a large tent adjacent to the convention hall to take care of 143 additional manufacturers. And even with this expansion, over 100 prospective exhibitors still could not be accommodated, so great was the demand for space.

Over 80,000 sq ft of display space were crowded with the latest in equipment, accessories, parts and supplies.

The 325 jobbers sponsoring the show operate 600 wholesale stores throughout the eleven western states. This show was 100% sponsored by the Pacific Automotive Show, Inc., a nonprofit jobber group formed in Los Angeles last fall.

A broadside advertising campaign by posters, direct mail, trade papers, and other methods gave the show the widest possible publicity. Sponsoring jobbers and exhibitors distributed 175,000 tickets to the show.

The huge success of this show has encouraged the management to look ahead with eager anticipation. Both San Francisco and Seattle have already bid for the 1950 show. The plan is to rotate the show in succeeding years among the larger cities, in order to bring the automotive manufacturers, jobbers, and dealers together.

Get in this Buell Profit Picture



LOOK AT THESE SALES!

If you could see the Buell Mfg. Co. sales record cards, you'd KNOW that dealers make big money selling Buell Air Horns for cars, trucks and boats. Here's a typical example:

FILE NO. 1352

BUELL MFG. CO. SALES RECORD CARD

DEALER: **AUTO ELECTRIC CO., LOUISVILLE, KY.**

NET SALES TO ABOVE DEALER

Jan.	Feb.	Mar.	Apr.	May	June
\$619.70	\$452.28	\$672.13	\$2363.13	\$1457.	\$1310.

Remember, you add regular dealer profits and installation fees to the above figures. Special patented features, national advertising and sales aids make Buell Air Horns one of the most profitable accessories you can handle. Write for the full money-making story.

Buell Manufacturing Company

915 West 49th Place, Chicago 9, Illinois



Monmouth — engineered bearings

YOU can save time, expense, trouble on motor re-conditioning jobs with genuine Monmouth Engine Bearings. The reason—they are engineered for each specific application and for the type of performance the engine is to deliver—an exclusive Monmouth feature.



Your NAPA Jobber is a Good Man to Know!

Result—time saved in application and superior performance—you and your customer both benefit.

Then, too, the Monmouth line is complete—including all wanted types such as **Micro, Steel Back, Babbitt Lined; Cadmium Nickel Lined; Copper Lead Alloy Lined and Clevite 77.** Distributed coast to coast by N.A.P.A. jobbers to provide minute-man delivery.

For motor repair jobs that satisfy—use Monmouth—the exclusive Engineered Line of Replacement Engine Bearings:

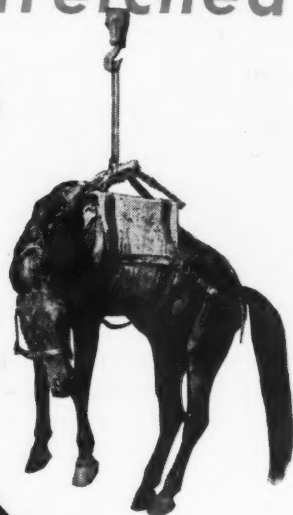
MONMOUTH PRODUCTS COMPANY, Cleveland 3, Ohio

**FOR ENGINE BEARINGS
CLUTCH PLATES AND PARTS
CHASSIS PARTS**

Monmouth
Trade Mark *is the name*

Put Your Money on the

Thermoid *Pre-Stretched* Fan Belts



Thermoid Radiator Hose



Curved or Straight Hose

The top quality hose made to original equipment specifications. Thermoid Straight and Curved Radiator Hose is built to resist any deterioration and is impervious to chemicals and anti-freeze.

Thermoid is the best name in fan belts. Thermoid's famous pre-stretching prevents stretch, slip, wear and fail, the four steps that, in ordinary fan belts, mean added maintenance costs. Thermoid Fan Belts always stay the same size.

Insist on Thermoid Fan Belts because it's good business to buy the best! Matched sets are available for belt drive applications where needed.

The Hanging Horse

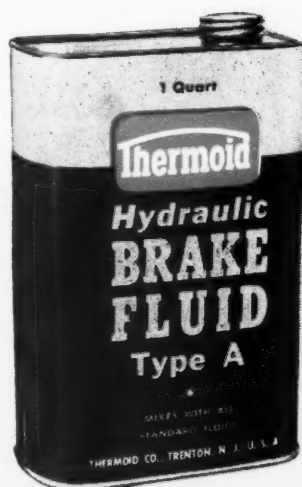
A Thermoid Thermodized Pre-Stretched Fan Belt was removed from service on a car, the weight of a horse suspended on it—and then, when the belt went back on the car, it performed perfectly at the original adjustment.

Thermoid Automotive and Industrial Products

Thermoid Line

Hydraulic Brake Parts and Fluid

Thermoid, the first name in brake linings, offers a complete brake service line to make better customers and better sales. Thermoid Hydraulic Brake Parts and Fluid live up to Thermoid's quality reputation. Thermoid Hydraulic Parts and Fluid match or exceed original equipment performance.



**Custom Built
Brake Lining**
Safest
Thing on
Wheels



Because Thermoid Custom Built Sets plus Precision Processing guarantee perfect brake performance, Thermoid is the big quality name in brake lining, the only brake lining that earns the famous Pittsburgh Testing Laboratory seal of approval.

The Thermoid Line

Brake Linings • Clutch Facings • Fan Belts
Radiator Hose • Hydraulic Brake Parts and Fluid
Car Mats • Thermoid Precision Process Equipment

Thermoid Company, Trenton, New Jersey

5 pound pull. Test, finally, the coil and condenser and replace if necessary.

After the distributor has been checked and adjusted, it should be installed on the car and the timing set with a timing light.

Coming to the fuel system, clean the fuel pump filter and sediment bowl (it pays to have a supply of

gaskets handy for these bowls, as they generally need replacing) and check the fuel pump for pressure according to the manufacturer's specifications. Disconnect the fuel line and blow compressed air back to the gas tank. Remove the air cleaner screen and allow it to soak in cleaning solvent while continuing with the tune up. On the car-

buretor, check the float level and adjust the idling speed and mixture. A vacuum gage should be used for this operation. If it is necessary to disassemble and clean the carburetor, it is usually advisable to obtain a complete carburetor repair kit so that all worn parts and gaskets can be replaced.

Heads and manifolds should be tightened with a torque wrench to the manufacturer's specifications. Also, check all hose clamps and other critical nuts and bolts that may have worked loose.

It often happens that a car operates at normal temperatures during the cold season, but on the first warm day that the car is driven hard, overheating occurs. Much of the summer's cooling system trouble can be avoided if the system is flushed out with a suitable chemical cleaner or by reverse flushing. The entire system should be checked for leaks, a rust inhibitor added, and the heater disconnected. It has been reported that sodium chromate or sodium dichromate, used as an inhibitor, is corrosive to aluminum cylinder heads and aluminum water pumps at normal operating temperatures. Bearing this fact in mind, it is best to avoid the use of inhibitors of this type in cars having aluminum as any part of the cooling system. The thermostat
(Continued on page 111)

NEW

IMPERIAL GAS AND OIL LINE SERVICE CENTER

3-in-1 Stock Includes

BRASS FITTINGS

FLEXIBLE GAS AND OIL LINES

FLEXIBLE HOSE AND ATTACHABLE FITTINGS
(For Oil Filter Lines, etc.)

EVERYTHING YOU NEED FOR GAS AND OIL LINE WORK

Handles practically any gas and oil line job that comes into your shop . . . including oil filter lines. 3-in-1 Stock contains the most needed fittings, flexible lines, hose and attachable fittings in a sturdy steel cabinet . . . everything clearly labeled. Handy Data Charts. Ask for Bulletin 373.

See Your Jobber

No. 444-F Imperial Gas and Oil Line Service Center complete with 3-in-1 Stock.....**\$39.91**
(Resale value of parts \$61.88)

Lid folds down to protect fuel lines.
Closed size 22½" x 11½" x 10½"

THE IMPERIAL BRASS MFG. COMPANY 1217 W. Harrison St., Chicago 7, Illinois

BRASS FITTINGS • FLEXIBLE LINES • SHUT-OFF VALVES • STRAINERS
SERVICE AIDS • BARREL FAUCETS • TUBE WORKING TOOLS



"Leeming never likes to drink alone."

Suskana*



... in **travel**-right
travel-**bright**
auto

seat covers!

more sales-winning features mean faster turn-over!

Here are fast-selling auto seat covers that combine eye-appeal with economy to set new sales records wherever they appear! And there's good reason for the popularity of these travel-right, travel-bright seat covers of Suskana Saran. They are as hardy as they are handsome . . . and priced for volume sales.

Smart, smooth auto seat covers of Suskana Saran, in a wide variety of beautiful patterns and weaves, feature permanently trim fit, built-in colors, unmatched durability. And because Suskana Saran resists dirt, stains, moisture and scuffing, a whisk of a damp cloth cleans it *right on the car!*

These sales-winning features, plus Suskana Saran's national advertising and promotion, add up to a new sales story for you.

Ask your supplier for auto seat covers made of Suskana Saran.

RIGHT
IN STYLE!



* SUSKANA fabrics for Auto Seat Covers, Upholstery, Men's wear, Women's wear, Neckties.

Susquehanna Mills inc.
404 Fourth Avenue, New York 16, N. Y.

WHAT YOU SELL AS A DEALER FOR

Austin

OF ENGLAND

YOU SELL the brilliant new Austin's 35-mile-per-gallon economy... plus the power and efficiency of its high compression valve-in-head engine... You sell the Austin's easy parking and smooth maneuverability in traffic...

YOU SELL the Austin's Continental smartness that makes it a style standout... its roominess to match high price cars... its impressive list of fine features... These are among *many* plus values you sell as an Austin dealer.

AUSTIN is permanently established in the American market, the leader in imported cars. There is a growing nationwide network of American dealers. A complete stock of replacement parts in this country.

A LIMITED NUMBER of protected dealer franchises are still available. This is an unusual opportunity for a valuable franchise in the popular price field.

YOU are invited to write for full information.

AUSTIN FEATURES

Standard on all Austin motor cars—no extra cost

- Up to 35 miles per gallon
- Continental styling
- Leather upholstery
- Independent front wheel suspension
- Interior jacking
- Heater and defrosters
- Valve-in-head high compression engine

THE AUSTIN MOTOR COMPANY, LTD. (ENGLAND)

250 West 57th Street, New York 19, N. Y.



Austin models include: A-10 Devon 4-door Sedan; Dorset 2-door Sedan; "Sheerline" Custom Sedan; "Atlantic" Club Convertible; "Countryman" Station Wagon and commercial models.

Spring Service

Continued from Page 108

should be checked for normal operating temperature, and the fan belt for tightness and deterioration.

A regular part of Spring servicing is a change of lubricant in the rear and transmission and a chassis lubrication. The covered springs should be repacked if necessary, and the brake fluid level checked. This is also a good time to change the oil filter cartridge, repack the front wheel bearings, and rotate the tires, if these services are due.

An accurate battery test should be included in the lubrication job. Cold weather, night driving and hard starting are batteries' worst enemies, and it is sometimes found that the end of the winter is also the end of the battery. It should be tested with a reliable instrument and recharged or replaced if necessary. At the same time terminals and cables should be examined, cleaned, and lubricated with a corrosion-resisting compound.

Fast driving on the open road requires accurate front end alignment, balanced wheels and good brakes. These safety factors ought to be checked before the vacation season begins, and while the car is in the shop for the preceding work, these items can be gone over.

Springtime offers an excellent opportunity to sell accessories and extra services such as body and fender work, touch-up, wax jobs, undercoating, and so forth. While the car-owner is most car-minded, that's the time to suggest these items.

Don't let the customer road test the car! In other words, don't let him be the first one to drive the car after it has been worked on. A few minutes of road testing may uncover some slip-up on the mechanic's part, and driving the car around usually shows up additional work which can be recommended and done at some time in the future.

Last, but far from least — wipe off all grease spots. Black smudges on the steering wheel and upholstery are always annoying and have been known to lose a customer who was otherwise satisfied with the work done on his car.

EXTRA DEPARTMENTS BUILD EXTRA SALES for Motor Car Dealers



Add to Your Present Facilities with These Adaptable, Low-Cost Buildings

You Get All These Features
**ALREADY BUILT INTO
Your BUTLER Steel-
Aluminum Building**



Rigid Frame,
Truss-Clear Design



First Quality Aluminum
Sheet Covering
(Fluted, Non-glare Type)



Low Cost Per
Square Foot



Bolted Construction



Die Formed Eaves



One-Piece Roof
Ridge Sheets



Permanent, Weather-
Tight Construction

Now you can offer complete motor car service and cash in on this newest sales-builder. With low-cost Butler buildings, you can quickly erect parts depots, wash rooms, paint shops, storage garages, gas pump stations, warehouses, shipping departments... be assured of steady, year-round profits, even when car deliveries are hard-to-get, or sales hard-to-make.

The simple, truss-clear design of Butler rigid frame buildings allows full space use for easy handling of cars. Complete line of sizes to suit your needs. See your nearest Butler dealer or distributor, or mail coupon today for complete information.

BUTLER STEEL-ALUMINUM BUILDINGS

The First Rigid Frame, Truss-Clear
Design To Be Mass-Produced

BUTLER MANUFACTURING COMPANY

Factories: Kansas City, Mo., Galesburg, Ill., Richmond, Calif., Minneapolis, Minn.



For Prompt Reply, Address: 7415 E. 13th St., Kansas City 3, Mo.

Please send information on Butler Steel-Aluminum Buildings, viz:

- ☐ 50 Ft. Width
- ☐ 40 Ft. Width
- ☐ 32 Ft. Width
- ☐ 20 Ft. Width
- ☐ 60 Ft. Width*

*(Bowstring Truss Design)

915 6th Ave., S.E., Minneapolis 14, Minn.
Dept. Y, P.O. Box 1072, Richmond, Calif.

Firm Name _____

Address _____

City _____ Zone _____ State _____

Quality Refinishing

Continued from Page 66

spray coating and the work is conveyed to a spray booth for the final finish.

Two or more spray-gun operators may apply the final bake-on enamel coating, depending on the size of the car, and as soon as they finish their work the car is conveyed to a low-temperature "oven," wherein the synthetic-enamel finish can be polymerized or hardened in less than two hours.

In some cases, small passenger cars have been completely refinished in slightly more than three hours; but when a specific job cannot be scheduled in advance, a six-hour refinishing interval is usually necessary, due to the fact that unscheduled work must await its turn on the production line. Long waiting periods are avoided by segregating jobs according to their number and size in assign-

ing crews for each day's work.

The preparation of a car for refinishing work may take place anywhere on the garage floor, and in some cases mechanical repairs are simultaneously accomplished.

Paint spray booths are standard enclosures, air conditioned and ventilated. Ovens are situated conveniently close to spray booths.

Synthetic bake-on enamel coatings were selected in preference to lacquers and other conventional

materials because they can be rapidly heat-cured to produce finish coatings with maximum durability.

In the Pelton Motors garage, enamel finish coatings are baked on at temperatures of 150 to 200° F. Because these coatings are not subject to shrinkage or evaporation during the solidification interval, each is substantially equivalent to two layers of an average solvent-dispersed lacquer.



New General Motors Body Scheduled for Summer

The new "B" body which General Motors has under development for introduction later this year will have more interior room, according to reports in Detroit. It is understood that there has been some differences of opinion in the corporation over the means of determining adequate head and leg room for interior styling. Latest reports indicate that Fisher Body is trying to get production started on the new body by July. It will appear first on the Buick 40 series, currently out of production, and probably later will be used on Oldsmobile and Pontiac.

AP IS FIRST

WITH DEALER
SALES HELPS
THAT BUILD
REAL PROFITS

Don't GAMBLE with DANGEROUS
CARBON MONOXIDE!
GET A FREE INSPECTION TODAY!

AUTHORIZED
SERVICE **AP STAG**

AP MUFFLERS

ARE ENGINEERS
YOUR CAR

"Look Up" FOR PROFIT WITH

the crankpins. We already have "stroked" 1949 Mercury shafts in operation, secured in the same manner as described here, and giving $4\frac{1}{8}$ stroke.

Compression ratios in L-head engines of much over 7.0 to 1 often show little or no improvement in peak horsepower, particularly with large bore, short stroke type en-


gines. To utilize high compression without loss in volumetric efficiency, most of the twenty or more manufacturers of special heads for the V-8 recommend "relieving" the block. Nearly all L-head engines have the valves slightly inclined, to the cylinders, with the seat and adjacent area counterbored by the factory. This leaves an irregular

ridge of metal on the top of the block surface which impedes gas flow from the intake valve annulus into the cylinder. This is not serious with present day compression ratios, but the removal of this ridge to a depth of $\frac{1}{8}$ to $\frac{3}{16}$ in. and for a width nearly equal to the cylinder bore is a necessity with the small volume combustion chamber employed by hot rod engine builders.

The problem of restriction through the transfer area of the L-head combustion chamber when compression ratio is increased has also been approached through revised piston head shapes. The small spherical dome of the stock Ford V-8 piston is obviously of some assistance and the same shape is used in nearly all of the $\frac{1}{8}$ and $\frac{3}{16}$ in. oversize pistons. A further improvement in breathing is secured in at least three makes of special heads by the so-called "crowsfoot" type of chamber. This will be recognized as somewhat reminiscent of the General Motors Research head used on several cars around 1928 and 1929. The counterbored head principle, where a raised head piston enters and fills the counterbore, gives probably the ultimate in compression ratio possible with an L-head combustion chamber, still retaining ample breathing.

Actual compression ratios used in hot rods are somewhat vague, in
(Continued on page 116)

BE FIRST WITH AP



Boost your muffler volume by using these powerful, tested sales builders—the AP Merchandiser—the AP Muffler Remover and the Merchandiser Kit (full of selling and merchandising helps) that accompanies both. Display AP mufflers—and you'll sell them! Inspect old, worn out mufflers—and you'll replace and install with new AP mufflers and pipes. Let these silent salesmen help you be first in muffler volume and profits.

THE AP PARTS CORPORATION • TOLEDO 1, OHIO

MUFFLERS • PIPES • MIRACLE POWER • dgf-123



"Sorry, we can't cancel your order for a new car immediately, but we'll put you on the waiting list."

AC LAUNCHES GREAT



Dirt

Greatest Consumer Campaign in AC History to Create Tremendous Demand for **AC OIL FILTER ELEMENTS**

Cash in on the greatest, most powerful consumer advertising campaign in AC history. AC's new, smashing "Dirt-Proof" campaign in the big national and farm magazines. It starts this month.

Half the cars and nearly all the trucks and tractors are filter-equipped and are big repeat users of replacement elements.

AC's great new campaign tells car, truck, and tractor owners why every engine needs an oil filter . . . and how AC Quality Oil Filters and Elements "Dirt-Proof" engine oil, preserve power, prolong engine life.

Such advertising rings true, because it *is* true. People will want "Dirt-Proof" protection for their engine oil . . . and will come to you for the AC Oil Filters and Replacement Elements that assure it.

Be prepared. Display the AC Oil Filter Service Dealer Sign and the special poster shown at the right . . . fill out your stock of AC Oil Filters and Elements . . . and cash in on AC's greatest advertising campaign.





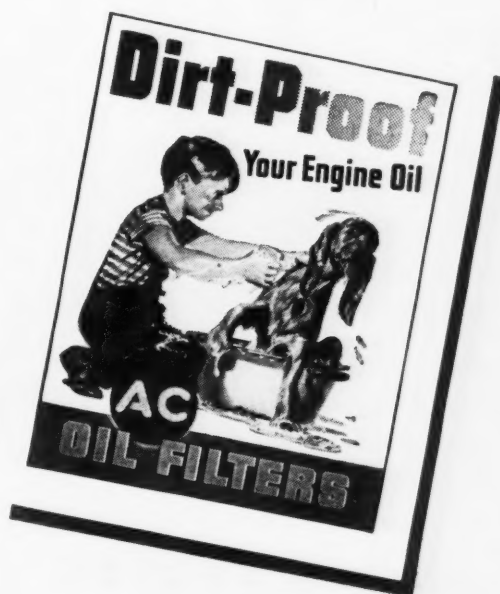
How To Get Your Share of This Business

Just 3 Easy Things to Do:

1. Ask your customer, "Would you like to drive with 'Dirt-Proof' oil?" Very few customers will say "No" to that question.
2. Tie element sales in with oil changes and lubrication jobs . . . while customers are oil-conscious.
3. Display the attractive point-of-purchase advertising which AC gives you. For April, it's a big 4-color poster, announcing the AC "Dirt-Proof" campaign and featured in AC's national advertising for April. Ask your AC wholesaler how to get this poster . . . no charge.

AC
OIL FILTERS

AC SPARK PLUG DIVISION • GENERAL MOTORS CORPORATION



view of variable piston displacement and amount of relieving, but, approximately, as high as 9.0 to 1 is used with 91 to 100 octane gasoline blends, and 12.0 to 1 with alcohol fuels.

Improved volumetric efficiency is also sought through "porting." As the term implies, it merely includes boring, filing, and polishing

of the intake ports to a larger size. The writer believes this operation is useless unless accompanied by larger inlet valves. Porting is almost a universal practice but larger intake valves are not often found. Both intake and exhaust valves on the later Ford V-8 engine have a head diameter of 1.51 in. Valves of $1\frac{5}{8}$ and $1\frac{3}{4}$ in. diameter are avail-

able, the largest being usable only on the intake and requiring complete removal of the seat insert.

Almost any combination of valve timing desired is available from at least 15 different companies specializing in reground camshafts. Because of the low roof of the high compression heads, the usual approach to cam regrinding has been to maintain maximum lift at the stock .292 in., and to increase duration. The cam base circle is reduced so that the new profile will clean up. Since the Ford barrel-type lifter has a diameter of 1.000 in., this also imposes restrictions on increasing the lift. Quite recently a new tappet of the mushroom type for the V-8 has made "high lift" cams possible and one make has a lift of .400 in. The mushroom tappet requires block machining for clearance, and is non-adjustable, but is made longer to compensate for the smaller base circle of reground cams. A barrel type lifter with a self-locking adjusting screw has been available since the war and has eliminated the need for brazing a shim to the stock Ford lifter to compensate for reground cams.

With Lincoln Zephyr valve springs used in place of the stock Ford-Mercury parts, the spring pressure at valve open position increases to 117 lb instead of 78 lb. These springs are interchangeable and permit speeds in the range of 7500 to 8000 rpm to be attained in low gear.

Multiple carburetors are "standard equipment" on all hot rods. Over 15 makes of manifolds are available and some makers offer several types. The most popular type uses two standard Ford dual carburetors with "low" risers spaced rather far apart. This necessitates moving the generator to one side over the cylinder head. The "tall" riser type usually has the two carburetors very close together so that the generator need not be moved. Manifolds are also available for three and even four dual carburetors.

For satisfactory ignition at high rpm several companies offer "converted" systems. These are reworked units with double breaker points for two coils. Completely

(Continued on page 118)

Fulton does it again! Another smashing campaign in the POST will introduce the new FULTON SIDE SHIELD — the attractive new accessory that keeps rain out and lets fresh air in — a handsome companion-piece to the popular Fulton Sun Shield.

Be ready to cash in on this big campaign and the hot-weather spurt in demand for Fulton shields! Write for complete details. Sell Fulton Side Shields.

Watch for these big ads in the POST:

- April 2 - - ½ page, 2 colors
- April 16 - - ½ page, 2 colors
- April 30 - - ½ page, 2 colors
- May 14 - - ½ page, 2 colors
- May 28 - - ½ page, 2 colors
- June 11 - - ½ page, 2 colors
- June 25 - - ½ page, 2 colors

ORDER NOW!

Win Customer Satisfaction with **MOPAR** Piston Rings

POWER PUNCH



They're *factory engineered and inspected* for Plymouth, Dodge, De Soto, and Chrysler cars, and Dodge "Job-Rated" trucks.

That's one of many reasons why MoPar Power Punch Piston Rings will satisfy your customers. And here are two reasons why they will satisfy *you*:

1. **They're easy to use!** They come to you packaged in convenient sets . . . with full installation instructions printed *right on the container*.
2. **They're easy to get!** They are available from dealers for Plymouth, Dodge, De Soto or Chrysler cars, or Dodge "Job-Rated" trucks.

Stock and install MoPar Power Punch Piston Rings now!

CHRYSLER CORPORATION • PARTS DIVISION
DETROIT 31, MICHIGAN

OIL SAVER SETS for new or rebored cylinders

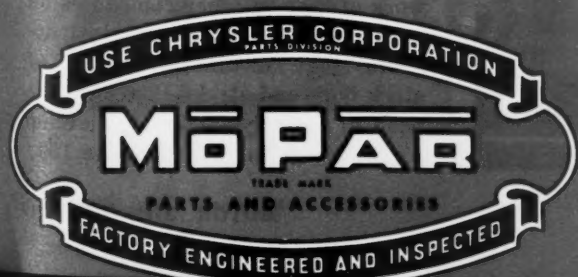


Engineered to seal compression, to allow cylinder wall lubrication, to prevent scuffing . . . to save on oil.

OIL MASTER SETS for re-ring jobs



Engineered to prevent blow-by, to permit lubrication of cylinder wall, to eliminate scuffing, to stop oil pumping.



Factory Engineered and Inspected for
**PLYMOUTH • DODGE
DE SOTO • CHRYSLER CARS
DODGE "Job-Rated" TRUCKS**

special distributors are also available, as well as several types of magnetos.

Nearly all hot rods seem to cool satisfactorily without the fan, though conditions are certainly helped by the practice of omitting the hood side panels to display the polished aluminum and chromium trim lavished on the engine. Ex-

haust headers in racing style welded tubing (also plated) are substituted for the stock castings and each bank carries its own exhaust system which may or may not be muffled. Quite a number of cars have a Y in each exhaust pipe system so that highway driving is done legally with mufflers, while at the speed trials, a plug can be re-


moved to give minimum back pressure.

Flywheels are either turned down to about 18 or 20 lb or an aluminum alloy type substituted, some of which weigh as little as 10 lb. This change improves acceleration quite a bit with some sacrifice in idling characteristics.

Dynamometer test data are available on modified Ford engines and are quite interesting. The curve shows results of some extensive test work by Vic Edelbrock who manufactures heads and manifolds. The four power curves shown are for an engine of 35/16 bore and 37/8 stroke or 268 cu in., with changes only in camshafts and fuel. In hot rod vernacular this engine was bored .125, stroked .125, ported, and relieved. The Edelbrock manifold carried two Stromberg 48 carburetors (dual type) and heads were 9 to 1 compression ratio. Tests were made with water pumps and two mufflers in place, but without cooling fan or air cleaners. Fuel was service station grade Ethyl gasoline except for the curve as noted, when alcohol was used, this, of course, necessitating changes in carburetor jets. As would be expected, the more radical valve timings give greater peak horsepower and reduced torque at lower speeds.

The curve shows the BMEP comparison for this test, and a BMEP of over 130 psi from 1700 to 3400 rpm is a very creditable performance. A point of interest is that all four cams tested gave equal power at exactly 3400 rpm. It will also be noted that the semi-race and 3/4 race cams gave identical curves. The most surprising item shown by the curves is the fact that increasing valve timing duration changed the peaking speed of the engine only 100 rpm, from 4550 to 4650 rpm. It is the writer's belief that this small gain in peaking speed is due to engine restrictions in two places: inadequate intake valve size and combustion chamber transfer area. This is borne out by test work of several other companies on similar engines. In general, it appears that modified engines of stock bore and stroke (239.4 cu in.) peak at higher speeds and develop

(Continued on page 120)



**NO SEAMS
NO JOINTS**

Continuous One-Piece Seamless Leakproof Construction.

**EASILY SHAPED
TO FIT ANY CAR
HOLDS SHAPE
AS RIGIDLY AS ANY
READY-BENT PIPE**

AIR-TITE GAS-TITE

UNIFLEX

SEAMLESS LEAKPROOF

Bendable **TAIL PIPES
AND EXHAUST PIPES**

**... No Need to Pass Up
INCREASE Any Exhaust Pipe or Tail Pipe Job
Sales and Profits**

**REDUCE
Capital
Investment**

A stock of a few sizes of UNIFLEX Bendable Tail Pipes and Exhaust Pipes will enable you to replace the tail pipe or exhaust pipe for any car. A complete stock takes up very little space and requires only a small investment.

Write for detailed information

EVERHOT PRODUCTS CO. 2001-9 W. CARROLL AVE. CHICAGO 12, ILLINOIS

West Coast Warehouse 1305 South Hope St., Los Angeles 15, Calif.

The Coverage Line of Finest Quality Jacks



AJAX JACKS

For Every Service Operation... for Every Car and Truck



● When you invest your money in lifting equipment, you want precision-engineered design, finest quality construction and low-cost, long-lasting dependable performance. That is what you get when you buy Ajax. With experience gained through more than 40 years of jack engineering and production, Ajax offers you a complete "Coverage Line" of shop service and tool box jacks to take care of your every need and those of your customers. When you specify Ajax, you know you are buying the best.

AJAX AUTO PARTS COMPANY
RACINE, WISCONSIN

Like Spearing
Fish in a
Barrel—



It's a Cinch to Sell These BOWES Spring Items!



● You don't have to be a super-salesman to sell these popular Bowes "Seal Fast" radiator protectors! Every motorist wants to get rid of winter's rust and dirt, and greet warmer weather with a clean radiator. Display these items prominently, drop a hint or two . . . and watch them sell!

Radiator Klen-Zur . . . Quickly removes the rust and dirt of winter—makes the cooling system work like new.

Rust-Rout . . . Protects the cooling system, prevents the accumulation of more rust.

Radiator Stop-Leak . . . This excellent product seals any existing leaks and effectively prevents new leaks.

Stock up NOW with this fast-selling radiator team . . . sell all three as a complete service . . . be ready for spring profits!

GET THAT TIRE REPAIR BUSINESS!

There's lots of extra profit in Bowes "Seal Fast" Tire Repairs. Not only that, but you couldn't have a better traffic-getter. The dealer who offers Bowes tire repairs wins friends and customers for new tires and reconditioned tires. Let your Bowes "Seal Fast" distributor show you the way to more and quicker business!

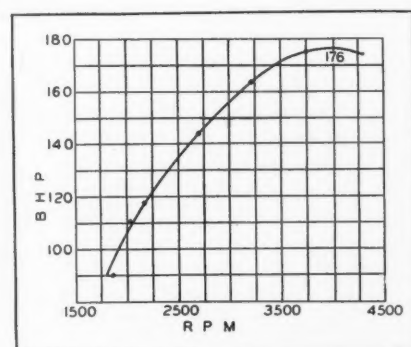
BOWES
SEAL FAST

BOWES "SEAL FAST" CORPORATION
INDIANAPOLIS 7, INDIANA

Hot Rods

Continued from Page 118

about the same peak bhp as those with increased displacement. This seems to bear out the contention that the stock inlet valve size is inadequate for the larger engines. Below is shown a power curve run by Electronic Balancing Co. on a 284 cu in. engine of 3 5/16 in. by 4 1/8 in. bore and stroke showing 176 bhp at 4000 rpm on gasoline. This same company has tested one engine of 239.4 cu in. which gave 211 bhp at 4800 rpm on alcohol fuel. This engine was used in the roadster which clocked 140.955, the present record.



An analysis of data supplied by Edelbrock throws some light on individual power gains contributed by each modification in itself:

Item	Bhp Gain	
	Min.	Max.
12% increase in displacement	7	20
Manifolds	6	11
Heads	12	14
Cams	10	18
Totals	35	63

From these same data, the stock engine gave 103 bhp, so the sum of modifications should give 138 to 166 bhp. Actually, of course, the net improvement is not equal to the sum of the individual changes, but instead 178 bhp at 4650 rpm was attained with the "super" cam and on gasoline.

Most hot rod builders, as pointed out previously, use the V-8 Ford or Mercury engine, but California manufacturers of "speed equipment" now have heads, manifolds, cams, etc., available for almost every make of stock car. The Wayne head for Chevrolets is a

(Continued on page 176)

NEW!

EXIDE SURE-START FAST CHARGER

with Thermostatic Control



It's a mobile 100-ampere fast charger with built-in thermostatic control . . . a high quality, high output unit at a new low price. Simple to operate—safe to use—built for a long service life—equipped for slow charging.

115-Volt, 60-Cycle A.C.
Price

\$149⁵⁰

Available on Exide
Time Payment Plan

Automatic Charging with Thermostatic Control

Each battery receives just the amount of charge it needs . . . automatically. It is not necessary to guess or calculate how long to charge. Simply turn on the charger and set the rate at 100 amperes. The thermostat turns the charger off when battery has received the maximum safe recharge.

See your Exide Distributor

"Exide" Reg. Trade-mark U. S. Pat. Off.

1888... Dependable Batteries for 61 Years... 1949

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32 • Exide Batteries of Canada, Limited, Toronto

MOTOR AGE, April, 1949

New Products Continued from Page 58

For further information use coupon on page 58

272

Kelite Products, Inc., Los Angeles, Calif., has introduced Formula 504 for removing paint, sludge, and light carbon from automotive and aircraft engines and parts, and similar metal cleaning. A feature of Formula 504 is that it is safe on all metals, including cadmium and zinc. The

manufacturer states that the material is sealed to lower evaporation rate, and will take a large amount of contamination, and still do a good cleaning job. Formula 504 will not burn up to 140 degrees Fahrenheit, and is used at normal room temperatures at from 75 to 90 degrees Fahrenheit. It may be rinsed with water.

"VIXEN" SHEARING ACTION

shows up fast!



ONLY
HELLER
MAKES
"VIXENS"

"Vixen" Files have been serving auto body and fender shops for years. Widely imitated, they have never been equalled. Specify genuine "Vixens"—made only by Heller—when you order from your jobber.

After a few strokes with a Heller Flexible "Vixen" File, run your hand over the work. At once you'll note the smooth surface, even contour, good-as-new finish.

"Vixen" shearing action does it! The curved teeth—specially milled—cut exactly right whether the file is pushed straight ahead or at an angle. You can see, from curled shavings that spiral off, that a "Vixen" actually *shears* its way to a smoother, scratchless finish.

What's more, with a deep undercut and ample clearance between the keen-edged teeth, this favorite of body and fender shops everywhere cuts faster, clears itself quickly of chips, needs less resharpening, lasts longer.

HELLER BROTHERS COMPANY

Newark, N. J.

Newcomerstown, Ohio

America's Oldest



File Manufacturers

VIXEN

Trade Mark Reg. U. S. Pat. Off.

MILLED CURVED-TOOTH FILES

MADE ONLY
BY
HELLER

273

Clinton Products Co., Clinton, Mich., is marketing a mechanic's seat and tool tray. The mechanic sits twelve inches from the floor



on the movable "Little Joe," with every necessary tool near at hand in the 14 in. x 18 in. steel tray. It is designed for use when working on tappets, under fenders, on brakes, bumping out fenders, and so forth.

274

The Andrews Manufacturing Company of St. Louis, Mo., announces new ignition and electrical service stock cabinets, designed especially for dealers requiring a well balanced stock of parts to service popular makes.

(Continued on page 126)



"Did you ever set the speedometer back, Mr. Smith?"

STOPS DIRT...
STOPS WATER...
STOPS TROUBLE



DUREX **GASOLINE FILTER**

MAKES GOOD...
MAKES FRIENDS...
MAKES PROFITS

Here's a small investment that pays the owner or operator big dividends in trouble-free engine performance. Here's a small item that pays dealers quick profits in easy sales to a big market.

More and more car owners are coming to regard an effective gasoline filter as essential equipment. One look at the Durex *all-metal* filtering element, and a customer knows it must be effective in stopping the tiniest particles of solid matter. The element is composed of innumerable tiny bronze spheres, moulded and permanently bonded, with microscopic passages between them.

Thousands of car and truck owners are only waiting to be sold on the advantages of fuel filtering . . . and once they're sold, the Durex Gasoline Filter will be their first choice.



Durex gasoline filters are distributed nationally by United Motors Service. Order a supply from your local distributor.

MORaine PRODUCTS

DIVISION OF GENERAL MOTORS CORPORATION, DAYTON, OHIO

HAND IT TO THE DRIVER..

THAT'S HOW SIMPLE

The Dayton Carry-A-Spare FAN BELT PROGRAM IS!

You'll Sell
ONE out of
FIVE!

It's the simplest, sellingest idea yet! All you do is hand the special Dayton Carry-A-Spare Fan Belt through the window of every car that drives in for service.

The special sleeve does the selling . . . tells the motorist how important his fan belt is . . . advises him to buy a spare NOW! Four out of five say "yes". All you do is ring up a full profit.

Try it! You'll up your fan belt sales sensationally. What's more, *you'll move out your regular stock of belts*, turn them into cash profits, quick.

Remember, Dayton and only Dayton has the Carry-A-Spare Program . . . and the nationwide promotion to make it sell MORE belts for you. See your jobber today or write *The Dayton Rubber Company, Dayton 1, Ohio.*

*Don't take our
word for it . . .*

READ WHAT THESE DEALERS SAY:

"Your Carry-A-Spare Program shot our sales up from an average of 8 fan belts a month to 15 the first week."

H. C. B., Lecompte, La.

"Sold 46 spare Dayton Fan Belts the first two weeks. Previous average, 2 per week. P. S: Population of Sanford is 5,000."

H. E. S., Sanford, N. C.

"A good deal! Carry-A-Spare idea selling 10 fan belts a week for us, half of which are from our regular stock."

M. R. F., Maryville, Tenn.

"Tripled our sales!"

F. L., Alexandria, La.

"Dayton Fan Belt sales up 250%."

L. F. S., Homestead, Fla.

The original Equipment Fan Belt

Dayton

THE MARK OF TECHNICAL EXCELLENCE

..PUT IT IN THE TRUNK!

What would you do if
your Fan Belt broke
TONIGHT?

SERVICE
STATION
22 Miles

Yet 85% of all
fanbelt failures
occur out on the
Road... Usually
far from help!

DON'T TAKE CHANCES!
Carry this Spare!

Your Fan Belt is the Heart
of your Car... Its Vital to:

- ENGINE SAFETY
- COOLING EFFICIENCY
- BATTERY CHARGING
- LIGHTS, STARTER, HORN

A FEW CENTS INVESTED NOW

May save a repair bill up to \$250
or more... let the attendant
put this belt in your trunk

NOW

NOTE: NOT ALL STATIONS CARRY
YOUR SIZE, BUT ANY ATTENDANT
CAN INSTALL THIS SPARE

Rubber

IN NATURAL AND SYNTHETIC RUBBER

New Products Continued from Page 122

For further information use coupon on page 58

275

K-D Manufacturing Co. has announced the addition of the No. 30 Socket Screw Key Set to its line. Sizes .050 inch to $\frac{3}{8}$ inch. Set is made up of 11 hex keys packed in a cadmium plated metal kit with hinged retaining clamp, plus extension handle to use on short end of key when long end must be

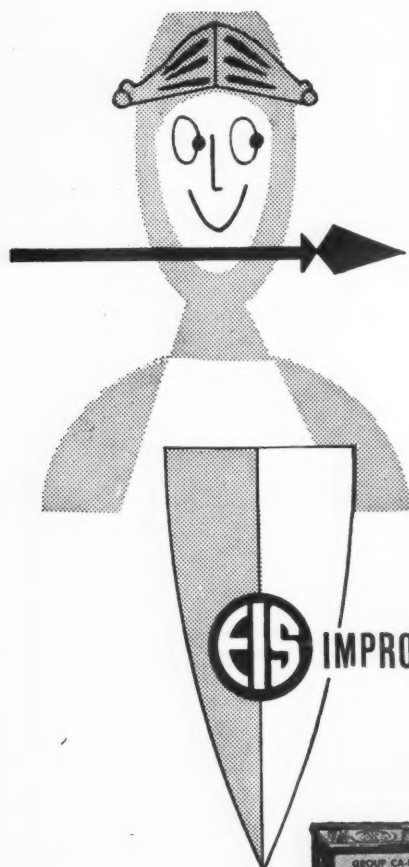
used to turn screw. Short end of key fits into hole in extension.

276

Van Houten-Rankins, Inc., Detroit, Mich., has announced its "Electric Salesman." This service message poster is especially adapted for use with fluorescent illumination, and is said to be increas-



ingly effective at distant ranges. The posters are written from the viewpoint of the dealer or repair shop and stress seasonable messages to the car owner.



REINFORCED to take punishment

Changing conventional cup design to molded rib construction —an exclusive EIS development —has done the job!

No need to pay premiums for ill-conceived and poorly executed makeshifts. With EIS, all you need to replace is the cup. The EIS way costs you less too.



RIBS MEAN
PROPER WALL TENSION

RIBS SEAL INNER WALL
OF CUP TO PISTON HUB

Good Advice

For perfect job insurance, it's advisable to use a new anodized Piston, and a new type EIS Boot . . . at standard prices . . . both included in EIS CA-P Kits, with the improved cup, of course.

If your Jobber cannot supply, write us for latest literature

EIS AUTOMOTIVE CORPORATION

Middletown, Connecticut



"Of course I'm ready to go. I'm wearing my strapless evening gown."

277

The Vulcan Mfg. Co., Winona, Minn., is marketing the Mota Gard, a cooling system filter. This device, which is said to fit all makes of cars having an upper hose with an inside opening of from $1\frac{1}{4}$ inches to 2 inches, is designed to filter sludge, dirt, grease, rust, scale and other foreign matter from the cooling system. The manufacturer states that it requires no attention except occasional cleaning of the filter, which is visible in the glass bowl, and will last for the life of the car.

(Continued on page 128)

...Once Again...

PRESTOMATIC FLUID DRIVE*
TRANSMISSION



The Beautiful Chrysler | *Silver Anniversary Model*

We're mighty proud to be delivering this new beautiful Chrysler now to dealers. It's the kind of car good men like to sell, for it will make good friends of all who buy it.

There's greater car value engineered into every part . . . and there are over 50 of the kind of advances people have come to expect first from Chrysler.

Now when people are really looking for money's worth in a car . . . the Chrysler-Plymouth dealer can point to greater value throughout this beautiful car. Greater value in performance . . . with Prestomatic Fluid Drive Transmission . . . with more horsepower, faster acceleration from the famous Chrysler Spitfire high compression engine—with waterproof ignition system. Greater value in comfort . . . with more headroom, more legroom, more shoulder room, wider chair-height seats. Greater value in safety with our new Safety-Level-Ride, the softest, smoothest, best controlled ride in our history . . . and with exclusive Safety-Rim

wheels that make it almost impossible to throw a tire.

This is a car designed with common sense and imagination in engineering. Easier to drive and park. With better vision. With hoods you can see over. And its well-bred new beauty reflects the sound and advanced engineering inside.

It's a great car for men like Chrysler-Plymouth dealers who have a fine reputation with their customers. And we're proud to deliver our new beautiful Chrysler Silver Anniversary Model to men who have the good business judgment to realize that selling and service go hand in hand. Men who say and mean it, and have service facilities to back it up—"We aim to take care of our own with Chrysler-Plymouth service that matches Chrysler-Plymouth engineering."

**YOU ALWAYS GET THE GOOD THINGS
FIRST FROM CHRYSLER**

*Gýrol Fluid Drive



Greater Car Value

New Products Continued from Page 126

For further information use coupon on page 58

278

The Blackstone Manufacturing Co., Inc., Chicago, Ill., announces a new Ford fuel pump replacement called the Air-Link, guaranteed trouble-free for 50,000 miles and featuring the all-weather safety factor of steady windshield wiper speeds. It is specially made for the Ford, Lincoln and Mercury

lines—car, truck and bus. Air-Link's improved pressure-vacuum system insures peak all-weather performance. Gasoline is delivered at constant optimum pressure, automatically, under all driving conditions, the manufacturer states, and windshield wiper suction is maintained at a steady level, even when accelerating.



Ask Your Federal-Mogul Jobber!

Experienced mechanics say the camshaft bearings are easily overlooked in the engine overhauls—but they can cause plenty of trouble on a reconditioning job! Check the cam bearings and when necessary replace with Federal-Mogul quality bearings.

ONE CALL FOR ALL . . . The Complete Line!

ALL of your bearing requirements are quickly supplied from the 100% complete Federal-Mogul line. "If it's on the road it's on our list." • Engine Bearings • Bushings • Connecting Rod Exchange • Reconditioned Connecting Rods • Rebabbitted Connecting Rods • Connecting Rod Bolts and Nuts • V-Seam Piston Pin Bushings • Bearing Metals • Solders.

FEDERAL-MOGUL
Service

Division of Federal-Mogul Corporation



DETROIT 13
MICHIGAN

1899 • FIFTY YEARS OF CONTINUOUS BEARING EXPERIENCE • 1949

279

The Wix Accessories Corporation, Gastonia, North Carolina, have introduced to the market the Wix Dirtector. This product, a merchandiser, is a flashlight with



a special plastic head, which provides a visual check on the condition of motor oil at the time an oil check is made. The check is carried out by dropping an actual crankcase sample from the dipstick to the Dirtector head and by comparing it with two sealed-in oil samples. The Wix Corporation is also featuring its Cabinet Merchandiser which combines with the Dirtector for selling operations. This weather-proof cabinet holds the Dirtector, filter identification chart, catalog, a supply of filters, and a supply of canned oil.

280

The Lester Company, Chicago, Ill., is marketing the Simplex turning signal for Dodge, Plymouth and De Soto from 1942 to 1948. This unit signals turns by flashing a light at the parking and rear lights simultaneously, flashing 60 times a minute. The manually operated switch, which houses the pilot light, is mounted with a clamp on the steering column. It has a 4-wire cable leading from it, two of these being attached to the dash board, and the other two being feeders to the left and right sides of the car. The present parking and rear light bulbs are replaced with double filament bulbs and contacts.

(Continued on page 130)

MOTOR AGE, April, 1949

Snap-on's Famous Ferret Set



Rugged tools . . . twice as strong as you would expect such slim, streamlined handles and thin-walled sockets to be.

"The Choice of Better Mechanics"



Present Owners:
Supplement your basic set with these Special Ferret tools . . .

CLUTCH-TYPE SCREW DRIVER



Handles clutch-type (figure 8) head screws. Built short for easy operation in close quarters.

RATCHET ADAPTOR



Converts any combination of Ferret handle, extension and socket into a reverse action ratcheting tool.



PLASTIC GRIP HANDLE

A shockproof, plastic handle, 5½" long that is ideal for electric work. Makes your Ferret Set more useful.

DOUBLE HEX FLEXOCKETS



Saves a lot of tough work fumbling for hard to get at studs and bolts. Eight sizes: ⅝" to ¾".



FERRET FLEXEXTENSION — A flexible steel cable extension connects handle and socket to work around corners and over obstructions.

EXTRA LONG FERRET SPEEDER

36½" long, 27" shank. Radius of sweep is 3¼". "Palm-Grip" handle rotates to provide easy operation.

Mechanics like this set because it is way over par in performance . . . the tools are strong and easily adaptable to a variety of jobs.

They squeeze into tight places and get those hard-to-reach nuts and bolts that defy the ordinary type wrench. Recently designed by Snap-on engineers, they have the new features that make fast, easy work of the tough jobs.

INCLUDED IN THE SET: ¼" and ⅝" single broached sockets; 11 double broached sockets from ⅜" to ⅞"; a speeder wrench, sliding tee, 8" reversible ratchet, nut spinner and universal joint, plus a 3", 6" and 12" extension. All complete in a metal box for only.

\$27.65

SNAP-ON TOOLS CORPORATION

8036-D 28th Avenue, Kenosha, Wisconsin

Enclosed find ☐ Check ☐ Money Order or ☐ Company Purchase Order for the \$27.65 Snap-on Ferret Set.

☐ Please send illustrated brochure describing 109 individual Ferret units.

Name _____

Address _____

City _____ State _____



\$1,500 inventory abolished — at a cost of \$4.46!



With more than 700 vacuum tubes needed by industry, a tube distributor would find profits consumed by 100% inventories. But by ordering tubes as needed via Air Express, he holds stocks to 25%. Example: Orders \$1,500 tube at 9 A.M. from supplier 900 miles away. Delivered to customer 6 P.M. same day. 16 lbs.: cost, \$4.46.



Remember, \$4.46 included speedy pick-up and delivery service, too. More protection, because you get a receipt for every shipment. Air Express is the world's fastest shipping service.



Your Air Express shipments go by the Scheduled Airlines direct to over 1,000 airport cities; fastest air-rail for 22,000 off-airline offices. Shipments keep moving with 'round-the-clock service.

FACTS on low Air Express rates

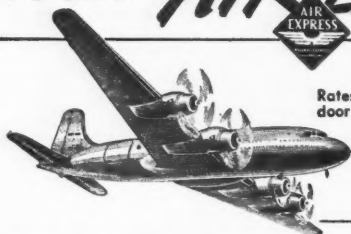
19 lbs. of machine parts goes 600 miles for \$3.54.
9-lb. carton of new styles goes 1400 miles for \$3.99.
(Every kind of business finds Air Express pays.)

Only Air Express gives you all these advantages: Special pick-up and delivery at no extra cost. You get a receipt for every shipment and delivery is proved by signature of consignee. One-carrier responsibility. Assured protection, too—valuation coverage up to \$50 without extra charge. Practically no limitation on size or weight. For fast shipping action, phone Air Express Division, Railway Express Agency. And specify "Air Express delivery" on orders.

SPECIFY AIR EXPRESS



GETS THERE FIRST



Rates include special pick-up and delivery door to door in principal towns and cities



AIR EXPRESS, A SERVICE OF RAILWAY EXPRESS AGENCY AND THE
SCHEDULED AIRLINES OF THE U.S.

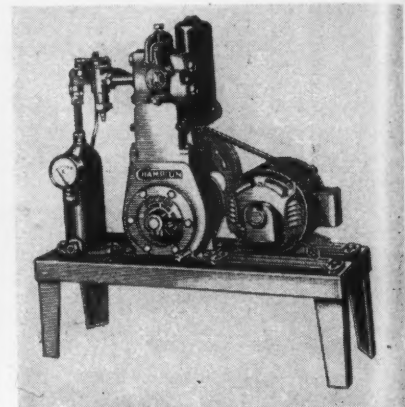
New Products

Continued from Page 130

(For further information use coupon on p. 58)

281

The Champion Pneumatic Machinery Company, Chicago, Illinois, is offering new bulletins on



air compressors, car washers and air hose reels. The bulletins describe and illustrate the complete line and latest models of Champion Air Compressors and car washers for garage and service station use.

282

The DeVilbiss Company, Toledo, Ohio, announces a new portable air compressor which weighs 32 pounds and can be operated from the normal light socket or wall



plug. This NCD compressor is said to hold a large capacity spray gun at 35 pounds pressure and deliver 2½ cubic feet of air per minute.

283

"X" Laboratories, Inc., New York City, New York, is marketing "X" Liquid, for repairing leaks in radiators from the outside in. The manufacturer states that "X" contains no acids, metal, glue, cement, or shellac.

(Continued on page 132)

FITZGERALD GASKETS

STAND THE GAFF . . .



SECTION A—A
 .002"-.003" THICK
 FUSED ALUMINUM OXIDE

ELECTRICALLY
 ANNEALED STEEL

ASBESTOS

.002"-.003" THICK
 FUSED ALUMINUM OXIDE

The new FITZGERALD metallic aluminum-fused-oxide steel asbestos gasket*

The strength of steel . . . specially tempered for compressibility and resiliency . . . is combined with aluminum's resistance to rust and corrosion in this new line of Fitzgerald gaskets which withstand highest compression tests where others fail. There's a Fitzgerald gasket for every engine.

The Fitzgerald Manufacturing Company, Torrington, Conn.

*T. M. Reg. U. S. Pat. Off.

Gasket craftsmen for 43 years

Says P. J. Fitzgerald . . .

Our metallic aluminum-fused-oxide steel asbestos gaskets have been tried and proven for many months. Therefore, I can say to you with all sincerity that we have never made a better gasket. We have kept pace with the industry for forty-three years and feel safe in saying to our customers that when better gaskets are made you can depend on Fitzgerald to make them.

P. J. Fitzgerald
 P. J. Fitzgerald President



FITZGERALD
gaskets
 SINCE 1906

New Products Continued from Page 130

For further information use coupon on page 58

284

Tuthill Spring Company, Chicago, Ill., announces the manufacture and distribution of new "Heavy Duty" replacement springs for 1949 Ford coupes, sedans and convertibles. These new Tuthill replacements are heavier than the standard Ford No. 8A-5560-D and have an added capacity of approx-

imately 15 per cent. Springs are available in sets for immediate delivery.

285

The Black Mfg. Company, Baltimore, Md., announces the addition of a new 2 Gallon Pressure Tank to its line of paint spray equipment. This pressure tank is com-

pletely galvanized, both inside and out, is painted on the outside, and has a concave bottom with a reinforcing skirt. The top, which



has a working pressure of 50 pounds per square inch, is made of cast iron. The pressure tank comes equipped with a forged brass regulator, a full size pressure gage, a combination blow-off relief valve, and a brass material outlet.

286

Parker Products, Inc., Minneapolis, Minn., introduces a single Universal Direction Signal, known as Direct-A-Lite, that is made to fit all popular makes of automobiles. A chrome master control unit, together with an individualized adapter package, and the job is complete.

(Continued on page 136)

Speed Work . . . Boost Profits With an *Atlas* 10" LATHE



Many a service manager will tell you how quickly and profitably you can recondition armatures in your own shop with an Atlas 10" lathe. "Do the job in 8 or 9 minutes"... "Save 75% of time formerly required to have armatures reconditioned outside"... "Our armature work pays us 50% profit instead of 5% or 10%, now that we do it ourselves instead of farming it out"... these are typical comments.

You can handle at least 43 other automotive repair jobs at greater speed and profit with an Atlas 10" lathe and accessories—grind valves and bushings, lap bearings, wind coils, test shafts for concentricity... besides using your Atlas to keep your own shop equipment in tip-top order. Ask your jobber for complete particulars. Write for literature.



SEND
FOR
FREE
COPY!

ATLAS PRESS COMPANY
488 N. PITCHER ST., KALAMAZOO, MICH.



MATCHED PRECISION TOOLS FOR
WOODWORKING AND METALWORKING



"Well, which one has the Toni?"

NORWAY COOLING SYSTEM COLLEGE

by professor don herold

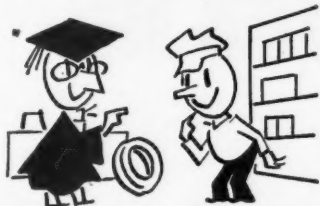
You've probably guessed it. I have a motive.

My ulterior purpose in running this university is to sell some NOR'WAY Automotive Products.

But wait! Don't cross me off. You're in on this in a bigger way than NOR'WAY.

I'm going to show you how to make possibly four or five times as much for *your own service* as you charge for the NOR'WAY preparations involved—maybe more.

HERE'S A WHOLE
NEW BUSINESS
WITHIN YOUR BUSINESS



IT'S A NEW BUSINESS

There's more to the right kind of cooling system service than "cleaning out a radiator." It's an all-around cooling system job for which you can get from \$4 to \$10—and more for other items that come up while you're at it.

But you have to sell the customer on having a real cooling system job done in the spring (and again in the fall).

I'LL DO HIM A FAVOR
TO GET HIS COOLING
SYSTEM
RIGHT
FOR
SUMMER



Idea No. 1 is to sell this idea to yourself. Almost every car will run cooler and more sweetly all summer if its cooling system is serviced properly in the spring. And it may miss stiff repair bills due to overheating.

SEE THIS MUCK
AND MIRE



You can run a finger around the neck of a radiator and give the customer an idea of the filthy stew of rust, scale, old oil and old anti-freeze that has piled up in his cooling system in winter. This garbage OUGHT TO COME OUT.

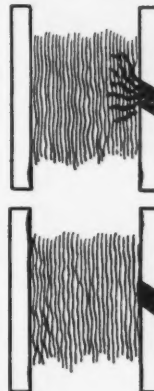


First, there are two swell cleaners to use: NOR'WAY® Cleaner is for the tough jobs. Some cleaners attack rust and scale. Others attack grease. But NOR'WAY CLEANER GETS ALL 3.

NOR'WAY Quick Flush is for customers in a hurry and for new cars that aren't so badly gunked up. You put it in and the motorist drives on. It's quick and economical. It is especially good on grease.

STOP LEAK AND ANTI-RUST

To round out the job, use NOR'WAY STOP LEAK. Some compounds stuff holes with coarse fibres, like this:



But when NOR'WAY STOP LEAK hits a leak it quickly forms a cement-like seal which closes **ONLY THE HOLE—not the radiator.**



NOR'WAY ANTI-RUST is mixed—like a cocktail—to protect all the different metals.

See! I've outlined a complete cooling system care for spring. Sell it as a package. And charge for time. You'll also discover other services to sell.

Go into this business this spring—and thank old Professor Herold for the money you coin.



Specialties Division

COMMERCIAL SOLVENTS CORPORATION

MAKERS OF NOR'WAY AND
PEAK® ANTI-FREEZE

17 EAST 42ND STREET, NEW YORK 17, N. Y.

NOR'WAY

CLEANER · QUICK FLUSH · STOP LEAK · ANTI-RUST

Get into the BIG CHANGE with

IT'S
"Big Change"
TIME



ALSO MAKERS OF WALKER SILENCERS, JACKS AND ELECTRIC LIFTS

WALKER'S SPRINGTIME PROMOTION

It Tells Customers and Sells Customers on—

"TIME TO CHANGE"

Every month this spring Walker reminds your customers in the pages of the Post to see you for seasonal services. This powerful color advertising puts you in the spotlight for increased springtime business. It's keyed to your own "TIME TO CHANGE" program and it pushes sales not only on Walker Filters and Cartridges, but on every other spring changeover service you have to sell.

"TIME TO CHANGE OIL"

Walker's advertising this spring—both national and local—strongly supports your oil changeover program. There's a business-building kit of FREE promotional helps for every Walker Filter Dealer—and there's a pocketful of BIG CHANGE waiting if you ask every customer, "May I change your oil filter?" every time you change oil.

"TIME TO CHANGE OIL FILTERS"

—and time to change to America's finest oil filter! Show your customers why Walker is the finest—why the Walker Oil Filter with patented Laminar construction is the only filter guaranteed against channeling, by-passing or migration of the filtering material. It's an unmatched product performance story as new as the season—a sales-maker and repeat customer builder you can cash in on to the limit. Ask your Walker Oil Filter Distributor for complete facts on "TIME TO CHANGE." Walker Manufacturing Company of Wisconsin, Racine, Wisconsin.

GET YOUR SHARE OF THE BIG CHANGE WITH

WALKER OIL FILTERS

WITH PATENTED *Laminar** CONSTRUCTION

*TRADEMARK



New Products Continued from page 132

For further information use coupon on page 58

287

Blackhawk Mfg. Co. of Milwaukee, Wis., has announced the addition of new Bantam Sets and a new "Wall Case" to the Bantam Porto-Power Line.

The new additions consist of a basic Bantam Assortment; a "Wall Case" which keeps attachments ready for use; the SA-19 assort-

ment which is the SA-17 set but in the "Wall Case"; and the SA-18 assortment which is the Blackhawk SA-16 set but also in the "Wall Case."

288

The Piston Ring Division of Koppers Company, Inc., Baltimore, Md., is now marketing a top com-

pression ring which is said to be twice as strong and to have 50 per cent more "spring" than conventional rings. Engineered around a new Koppers-developed alloy, called K-Spun, and produced by a special centrifugal casting process, the new ring is now available for all makes of passenger cars, the manufacturer states. Koppers is guaranteeing that these rings will not break in installation or for the life of the car.

289

The Lisle Corporation, Clarinda, Iowa, announces a new tool display board, being offered without cost to jobbers who carry a recommended minimum stock of Lisle Tools.

The 24 by 32-inch wall display is trimmed with stainless steel and faced with lithographed reproductions of all Lisle Tools except the new Lisle Bench Hone and Rod Aligner.

290

Federal-Mogul Service, Coldwater, Mich., is marketing matched sets of reconditioned connecting rods for Ford 85 and 60 horsepower engines, conveniently packaged.

All of the rods in one set conform to established specification standards, as to dimensions, quality and appearance.

291

Neapco Products, Inc., Pottstown, Pa., announces the addition of a new rubber boot for Neapco-Detroit used on Plymouth and Dodge 1938-49 (except 7 passenger from 1940-46); De Soto 50 x 1933 and SD 1937-40; Chrysler Royal 1937-39.

292 *

Champ Items, Inc., St. Louis, has added the No. 610 Universal Continuous Thread Rods to its line of reconditioning short cuts. These thread rods can be used as studs or bolts. Bolts can be made from these studs by proper selection of rod and nut, then riveting the end. When installing as studs, cut to required length, then use double nuts locked together.

U S JOBBERS know...



THAT YOU DEMAND

Quality Tough Axles and Prompt Delivery

Your jobbers are always ready with U. S. Axles—
to supply your needs promptly. For over 25 years,
tough U. S. Axles have been meeting every demand.
Your jobber has a complete inventory of U. S. Axles.
For further detailed information, see your jobber.

YOU CAN DEPEND ON U S!

Write for U. S. Axle's latest catalogue.
Replacements for all types of vehicles,
including Army surplus trucks.

US AXLES

THE U S AXLE COMPANY, INCORPORATED
POTTSTOWN, PENNSYLVANIA

Now we tell
3 times
as many...
with ads
5 times
as big

● To help the automotive trade sell **ANOTHER four million Trico Windshield Washers**, these new jumbo-size Trico advertisements now are appearing monthly in **ALL FIVE** of the country's top-ranking magazines. More than 17 **MILLION** sales-packed messages every four weeks!

Trico's "Two Little Squirts" are easier than ever to install on nearly all cars, new or old...*especially* on any of the fourteen makes "piped" at the factory for double-quick installation.

The biggest selling season...and Trico's heaviest advertising campaign... are just ahead. Ask your jobber now for stocks, for colorful display material and for other sales helps.

TRICO PRODUCTS CORPORATION,
BUFFALO 3, N. Y.

Your car can
do this

● You touch a button. Two jets of water squirt in the path of the wiper blades... and wash off roadsplash, grime and dust.

A Trico Automatic Windshield Washer does it!

In a matter of minutes, most car dealers, repair shops or service stations can install the "Two Little Squirts" on any of the fourteen makes of cars which have special built in provision for them.



(Trico Rainbow
Blade shown)



Collier's

POST

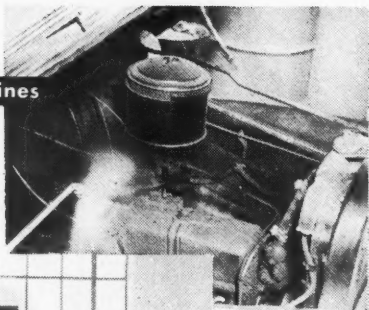
TRICO Windshield Washers
FULLY AUTOMATIC... NOTHING TO PUMP

Trico Products Corporation
Buffalo 3, N. Y.

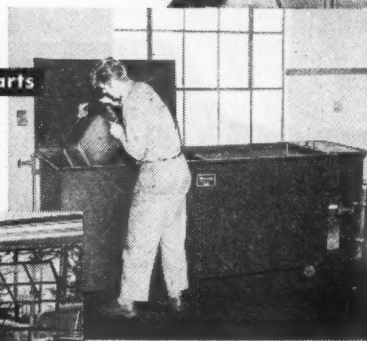
**whenever
you want to
get rid of
GREASY DIRT**

BUT QUICK!

From Engines



From Greasy Parts



From Very Greasy Floors



there's **NOTHING**
better than
MAGNUSOL!

MAGNUSOL takes the "cling" out of oily, greasy dirt—anywhere. Better than a steam gun. No heat. No caustic fumes. No attack on paint. Safe for all metals. Non-toxic and non-inflammable, too!

A Matter of Minutes

to clean greasy surfaces. Just spray or brush on a solution made up of one part of MAGNUSOL concentrate and eight parts of kerosene or safety solvent. Let it soak in a few minutes and then rinse with water at room temperature. That's all!

Eliminate hand work and cut cleaning time to the limit with MAGNUSOL. Write for Bulletin #21.

MAGNUS CHEMICAL COMPANY • 174 South Ave., Garwood, N. J.
In Canada—Magnus Chemicals, Ltd., 4040 Rue Masson, Montreal 36, Que.
Service representatives in principal cities



IN THE AUTOMOTIVE FIELD IT'S

MAGNUS

CLEANERS • EQUIPMENT • METHODS

New Literature

For Further Information Use Coupon on page 58

C-35—The Wright Hoist Division of American Chain & Cable Company, Inc., York, Pa. A folder describing the new line of Wright Speedway Electric Hoists.

C-36—L. S. Starrett Co., Athol, Mass. A catalog and handbook of precision tools, describing and illustrating the precision measuring tools used for maintenance work, and listing prices.

C-37—Johnson Bronze Company, New Castle, Pa. The 1949 catalog on industrial bearings.

C-38—South Bend Lathe Works, South Bend, Ind. A catalog describing the complete line of South Bend lathes, attachments, accessories, and the new drill press.

C-39—Associated Retailers of Indiana, Indianapolis, Ind. "Parking For Smaller Cities," a factual guide of current authoritative information for dealing with all phases of the parking problem in smaller cities.

Polk Says Average Age Of Cars Is 9.3 Years

Figures just released by R. L. Polk & Co., automotive industry statisticians, indicate that the average age of passenger cars on the road today is higher than had been assumed. According to the Polk figures, average age of cars at the end of last year was 9.3 years, with trucks in a little better position with an average of 8.0 years. Average mileage on cars used today is estimated at 6000 miles, predicated on an average car use of 7000 miles a year. The report says further that less than one-third, or 11,121,000, of the total new car and truck registrations in the country are post-war models. Consequently, with two-thirds of the country still driving prewar models the outlook for service operations to continue at a profitable level are good. Also the prospects for new car sales as indicated by replacement needs are excellent.

Handle folds against
shaft . . . base
is removable!

Handle can't spin while
car is stationary or is
being lowered!

Uses same prin-
ciple employed to
actuate airplane
bomb-bay doors,
wing flaps, etc.

Pressed-steel tubular
shaft—no bending
or buckling!

Fits any bumper!

Sturdy, dependable,
long-lasting!

Works so easily and is so
safe a child can operate it!

a fine bumper jack
made still finer!

Saginaw

RECIRCULATING-BALL BUMPER JACK

Not once in a decade will you find an accessory item so profit-hot as the unusual and exclusive Saginaw Bumper Jack!

That's because it's so *different* . . . because it's *more efficient* . . . because it's *safe* . . . because it's *easier to operate*!

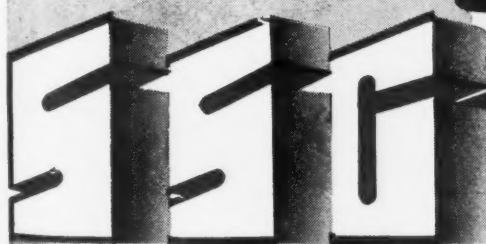
Place this jack *in the hands* of every customer who comes into your place of business. He will sell himself . . . you will take his order. It's as simple as that! So hurry . . . call your local United Motors distributor at once.

TESTED AND PROVED PRINCIPLE!

Rolling balls are inserted between threads where they recirculate through a special race-way and continuously reduce friction to increase efficiency.



Saginaw Recirculating-Ball Bumper Jacks are available through United Motors distributors. Call yours today!



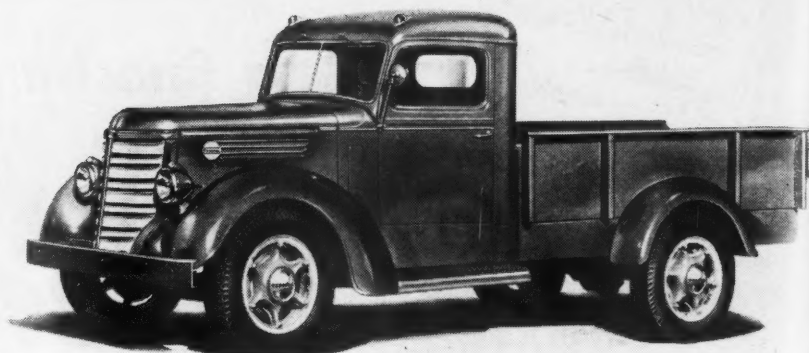
Saginaw

PRODUCTS

STEERING GEAR ASSEMBLIES • STEERING LINKAGE ASSEMBLIES
PROPELLER SHAFTS • DIESEL ENGINE AND AIRCRAFT PARTS

New Model Federal Truck Placed on the Market

The Federal Motor Truck Company, Detroit, Mich., announces this Federal Model 15M Utility Express truck, which ranges in size from $\frac{3}{4}$ to 2 ton and is powered by a six-cylinder Hercules engine developing 93 horsepower at 3400 rpm. The unit comes equipped with 6.50/20 six-ply single front and rear tires with steel spoke wheels. The single speed rear axle has a ratio of 5.67 to 1, with an optional ratio of 6.67 to 1. The truck is equipped with a 4-speed transmission.



**He Carries
A COMPLETE
FUEL PUMP STOCK
Under One Arm**

The "Salesman's Favorite Armful" hits the market at just the right time when maximum sales and minimum inventory are both essential.

The Autopulse Counter Display Kit (3-in-1) is a smashing sales hit because it is the only way the serviceman can surely give fuel pump service on ANY CAR that comes into his station at any time . . . Carry fast-selling cam pumps—then fill out with Autopulse.

KIT WOULD LOOK
LIKE THIS ON
YOUR COUNTER.

5295

Write for description and prices to Autopulse Corporation.

AUTOPULSE Corporation
LUDINGTON, MICHIGAN

Electric Auto Lite Has Highest Pay Roll in Company History

With sales of \$210,070,435, the highest in company history, The Electric Auto-Lite Co. and subsidiaries today reported net earnings of \$12,196,493 or \$8.16 per share for the year 1948.

Sales the preceding year totaled \$185,991,022 and net earnings \$10,714,987 or \$7.17 per share. The percentage of earnings to sales remained at 5.8 per cent for both years.

According to Royce G. Martin president and chairman of the Board, 33 per cent or \$69,047,035 of the record gross income was paid out in factory payrolls, the highest figure in company history. Hourly earnings for the 23,471 men and women employed by Auto-Lite in 28 plants in the United States and Canada averaged 13 per cent more than in 1947 and 99 per cent higher than in 1941.



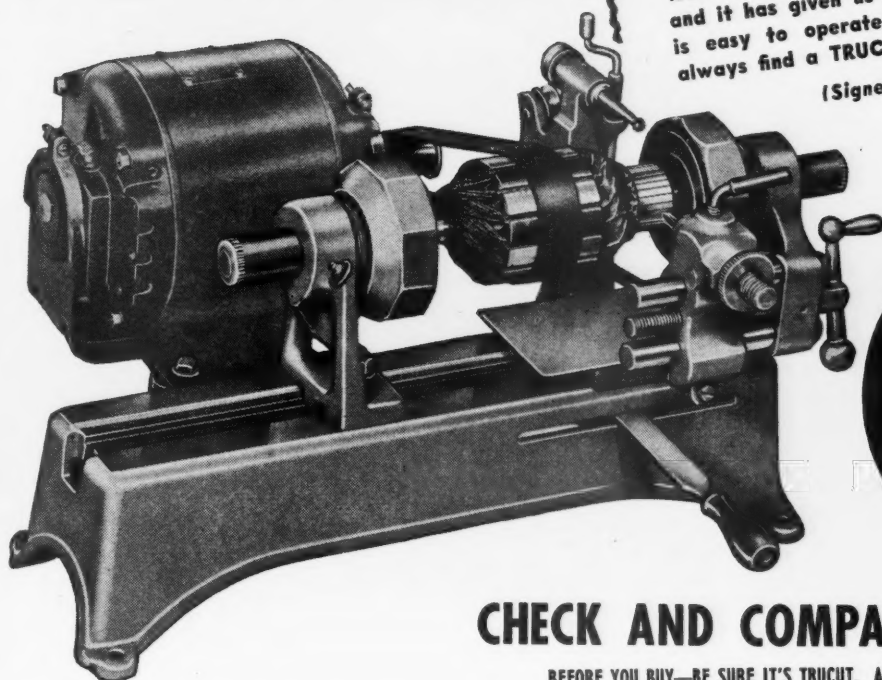
"Are those road hogs, Dear?"

READ WHAT TRUCUT DID FOR THIS SHOP

"In 1944 we purchased a FRANK N. WOOD CO. TRUCUT ARMATURE LATHE AND UNDERCUTTER. At the time of purchase we had a bottleneck in our shop, the servicing of generator and starter armatures. Since our purchase of TRUCUT LATHE there is no more running out with armatures, we have speeded up our generator and starter jobs, we have relieved the congestion in our shop and not only is the lathe a money maker, it is a time saver.

We have used our TRUCUT LATHE for four years and it has given us perfect satisfaction. The lathe is easy to operate, the upkeep is nil. You will always find a TRUCUT lathe in our shop.

(Signed) Harold Jordan, Owner
Jordan Auto Service
Colorado Springs, Colorado

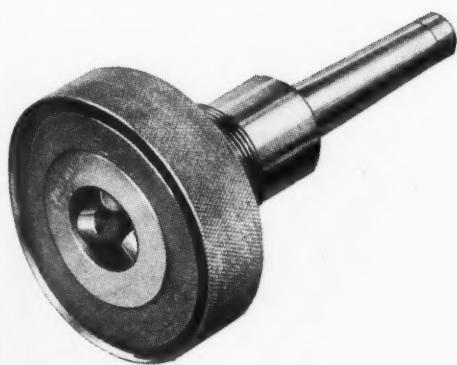


**TRUCUT
ARMATURE
LATHE AND
UNDERCUTTER**

CHECK AND COMPARE THESE FEATURES

BEFORE YOU BUY—BE SURE IT'S TRUCUT. ALL OUR PRODUCTS BEAR THE TRUCUT LABEL

- LOW INITIAL COST
- NO COSTLY ATTACHMENTS - COMES COMPLETE
- NO MAINTENANCE PROBLEM
- DOES NOT REQUIRE TRAINED MACHINIST TO OPERATE
- NO TIME WASTED ON SPECIAL SET-UPS
- ECONOMY OF SPACE
- DOES A PERFECT JOB OF MACHINING AND UNDERCUTTING



TAILSTOCK REST FOR LATHES

Thousands in active use today. Accurate, self centering, the perfect Tail Stock Chuck for supporting armature shafts while machining commutators.

SOLD ONLY THROUGH JOBBERS

MOTOR AGE, April, 1949

WRITE FOR CATALOG 4 ML

FRANK N. WOOD CO.

... SINCE 1933

TRUCUT

344 W. MAIN STREET • WAUKESHA, WIS., U. S. A.

PACIFIC COAST ADDRESS

1130 W. OLYMPIC BLVD., LOS ANGELES 15, CALIF.

4 Good Reasons Why . . .

you can make *Big Profits*

MOTORIZED

with a CAR COOLER that REALLY COOLS!



Electrically Driven car cooler!

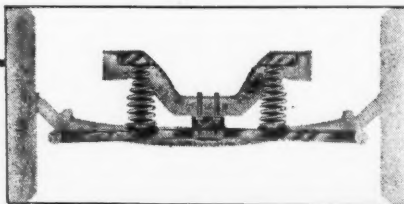


1. WINTER BREEZE makes July feel like Spring . . . on desert, highway or scorching streets . . . whether the car is moving, idling in traffic, or parked!
2. WINTER BREEZE mounts on the *door*, not the glass! Does not obstruct driver's or passengers' view. Adjustable to fit any size car window. Installed, or removed, in less than 5 minutes. Window can be rolled up and car locked.
3. WINTER BREEZE is *automatic*—no ropes or chains to pull. 3,200 RPM low-amperage DC motor drives the pump, fan and filter that *washes, cleans* and circulates cool air to every part of car!
4. WINTER BREEZE is guaranteed for 1 year . . . your assurance of satisfied customers who will recommend the Car Cooler—and *you*—to other automobile owners!

WINTER BREEZE motor-driven Car Coolers are smartly styled. In Harmonizing colors, priced to please! Demand will be great . . . so, if you want to cash in on this chance to *make real profits*, mail the coupon below at once for full details!

ATTENTION!

Also ✓ check if you want to make a \$20 profit on patented Front Coil Spring Assembly that makes '35 to '48 Fords, Mercurys ride like 1949 models equipped with "Hydra-Coil" Springs!



AUTOMOTIVE DIVISION FEDERAL IDENTIFICATION COMPANY

Dept. M4 1713-35 WEST GRAND AVENUE • OKLAHOMA CITY 6, OKLAHOMA

— RUSH discounts, details on Winter Breeze motor-driven Auto Coolers!

— TELL me about Front Coil Spring Assembly for 1935 to 1948 Fords, Mercurys.

IMPORTANT: If Retailer, give your Wholesaler's name

Your Name _____
 Firm _____
 Address _____
 City, Zone, State _____
 Type of Business _____

Wholesaler ☐
 Retailer ☐

WRITE NOW

Fisher to Spend \$20 Million On Pittsburgh Area Plants

The two new metalworking plants which Fisher Body Div. of GM plans for the Pittsburgh area will involve an expenditure of an estimated \$20 million, according to the Pittsburgh Development Investment Council. The division has leased a war surplus plant at Ambbridge, Pa., which will be used for blanking steel to approximate size required for stamping operations. A new stamping plant will be built at West Mifflin, just outside Pittsburgh, to fabricate body parts for various Fisher assembly units throughout the country.

Some Facts and Figures On Automotive Products

Wholesale value of all automotive products in 1948 was highest in history, roughly \$9.5 billion. It represented an increase of 18.5 per cent over 1947 and 118 per cent above 1941. Value of passenger cars was \$4.771 billion, 20.4 per cent above 1947 and 85.8 per cent greater than in 1941. Wholesale value of trucks and buses last year increased 25.2 per cent to \$2,139 billion, which was 99.9 per cent above 1941. Replacement parts and accessories wholesale value was up 10.5 per cent over the previous year and 262 per cent above the 1941 level.

Classified Advertisements

IGNITION TESTERS: — coil-condenser, attractive instrument. Regular \$42.50, close-out \$12.95. Moneyback guarantee. Modelectric Products, Asbury Pk., N. J.

WHOA, MISTER SALESMAN! Get this exclusive Flush-o-matic radiator service franchise. Brother, with so little work involved, we'll guarantee the returns will amaze you. Tailor-made to coincide with your present territory—low investment. Sell or lease machines. Big profits on original sale and every radiator cleaning job performed by outlets. A perfect "tie-in" with your present operation. Write today for complete details and we'll prove it. INDUSTRIAL RESEARCH, INC., 1755 S. CENTRAL AVE., PHOENIX, ARIZ.

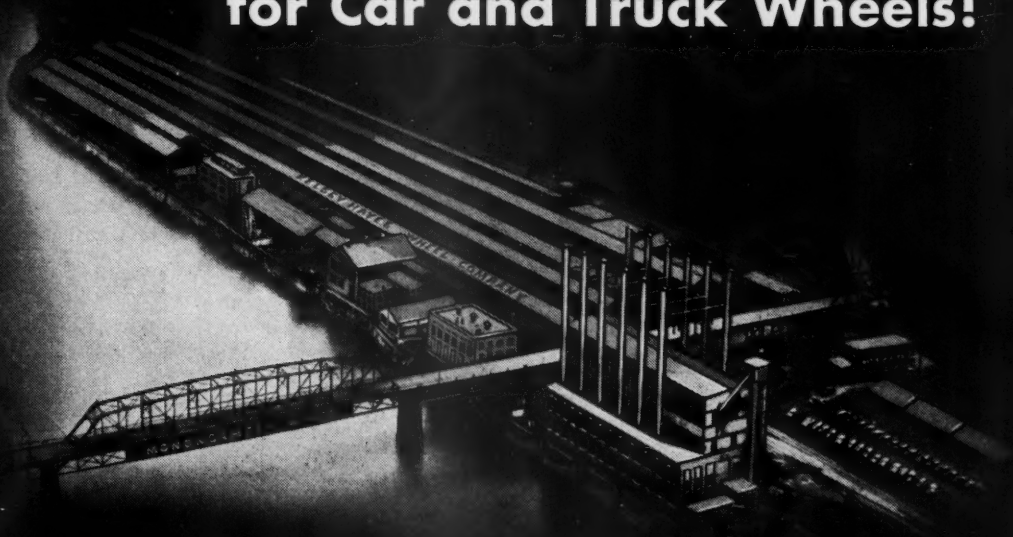
BUSINESS FOR SALE: Established implement business, located in good farm community in central Illinois. Modern brick and block building, with up-to-date repair shop. Several auto dealerships also available. For particulars write Box 23, Motor Age, 5601 Chestnut St., Philadelphia 39, Pa.

KELSEY-HAYES

McKeesport, Pennsylvania Plant

Eastern Assembly Division

for Car and Truck Wheels!



**Located in the East at the
Source of Steel—On Main Rail,
Highway and Water Routes.**

This Kelsey-Hayes McKeesport Plant, the chief source of wheels in Kelsey-Hayes' great 8-plant operation, is most economically located to supply eastern assembly plants. Right at the source of the world's leading steel production, and in the center of a remarkable water, rail and highway transportation system, Kelsey-Hayes efficiently serves every point in the east (and throughout the United States). By water, Kelsey-Hayes can even ship via the Ohio and Mississippi Rivers to southern points and the Pacific coast! It's Kelsey-Hayes for wheels of all kinds, for original equipment or changeovers!



ASSURES PROVEN PRODUCTS AT

KELSEY-HAYES WHEEL COMPANY

DETROIT 32, MICHIGAN



Wheels—Hub and Drum Assemblies—Brakes—"Vacdraulic" Brake Power Units—for Passenger Cars, Trucks, Buses—made by Kelsey-Hayes' 4 Michigan Plants and Windsor-Canada Plant • "Magdraulic" Electric Brakes • "Lathan" Vacuum Power Brake Equipment for Tractor-Trailers—made by Kelsey-Hayes' South San Francisco-Lathan Plant • Wheels—Hubs—Axles—Parts for Farm Implements—made by Kelsey-Hayes' French & Hecht Plant at Davenport, Iowa.

Legally Speaking

"Outlawed" Debt Can Seldom Be Collected

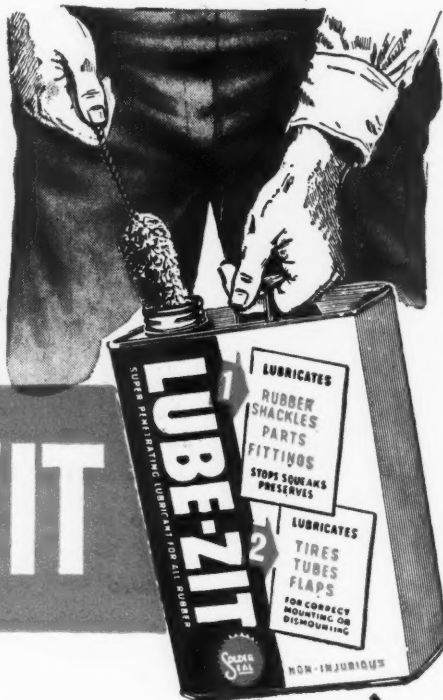
Generally speaking, an account or other debt that has been "outlawed" by the running of the statute of limitations cannot be collected by legal action. Every state has a law which provides that a debt cannot be successfully sued on

after the number of years specified in the law. This is called the statute of limitations, but the time allowed for suit is different in different states.

However, the collection of an old debt after the expiration of the time stated in the statute isn't always hopeless, as a recent Colorado case shows.

There two notes were sued on long after the time allowed by the statute had expired. It was shown that, before the end of the time allowed by the statute, the debtor had paid five dollars on each note, both of which were for large amounts. Those payments were enough to "toll" the statute, the court said, and enforced the outlawed notes.

It works like this: a customer owes you a bill for service and material sold to him in July, 1941. Assuming the statute in your state is six years, you will lose the entire bill unless you sue by July, 1947. In June, 1947, he makes a small payment on account—as little as a dollar. That payment starts the six years running all over again, so now you will have until June, 1953, to sue. The time allowed by the law for bringing suit is computed from the date of the last payment on account, not necessarily from the date of sale. (*Capek vs. Monahan*, 184 *Pacific Reporter*, second series, 501)



LUBE-ZIT

FINEST ALL-RUBBER LUBRICANT MADE!



From the makers of world-famous Solder Seal products comes this finest of all complete rubber lubricants. LUBE-ZIT goes right to work preserving, protecting and lubricating rubber shackles and all rubber parts and fittings. LUBE-ZIT was created to quiet squeaks, keep rubber pliable without injury. Ideal for squeaky fan belts, too!

You'll need this new, superior lubricant again and again. You'll want LUBE-ZIT'S exclusive can-and-applicator . . . ends the trouble of pouring out and dipping because LUBE-ZIT'S can is specially made for use with your free applicator!

FREE
Applicator
with every
Gallon!

RADIATOR SPECIALTY COMPANY
CHARLOTTE NORTH CAROLINA

DUAL PURPOSE . . .

LUBE-ZIT, the dual-purpose product, is also the superior lubricant for quick mounting and dismounting of tires, tubes, flaps—natural and synthetic. Non-poisonous, non-inflammable. Use it regularly . . . it's the best for your money. Order from your jobber NOW!

Carriers Not Liable For "Act of God" Damage

A railroad or other carrier is not liable for damage done to goods en route by an "Act of God," according to a recent decision of the Missouri Court of Appeals.

In that case certain merchandise in good condition was loaded into a railroad freight car for shipment. When the car reached

(Continued on page 148)



Thor
Silver Line
ELECTRIC

MOST POWERFUL EVER BUILT!

IMPACT WRENCH



AMAZING ALL-PURPOSE IMPACT TOOL FOR SCORES OF JOBS!

For complete information about this great new Thor Silver Line $\frac{3}{8}$ " Electric Impact Wrench . . . including data on the scores of accessories that can be used with it . . . see your Thor distributor or write for Circular 1025.

INDEPENDENT PNEUMATIC TOOL COMPANY

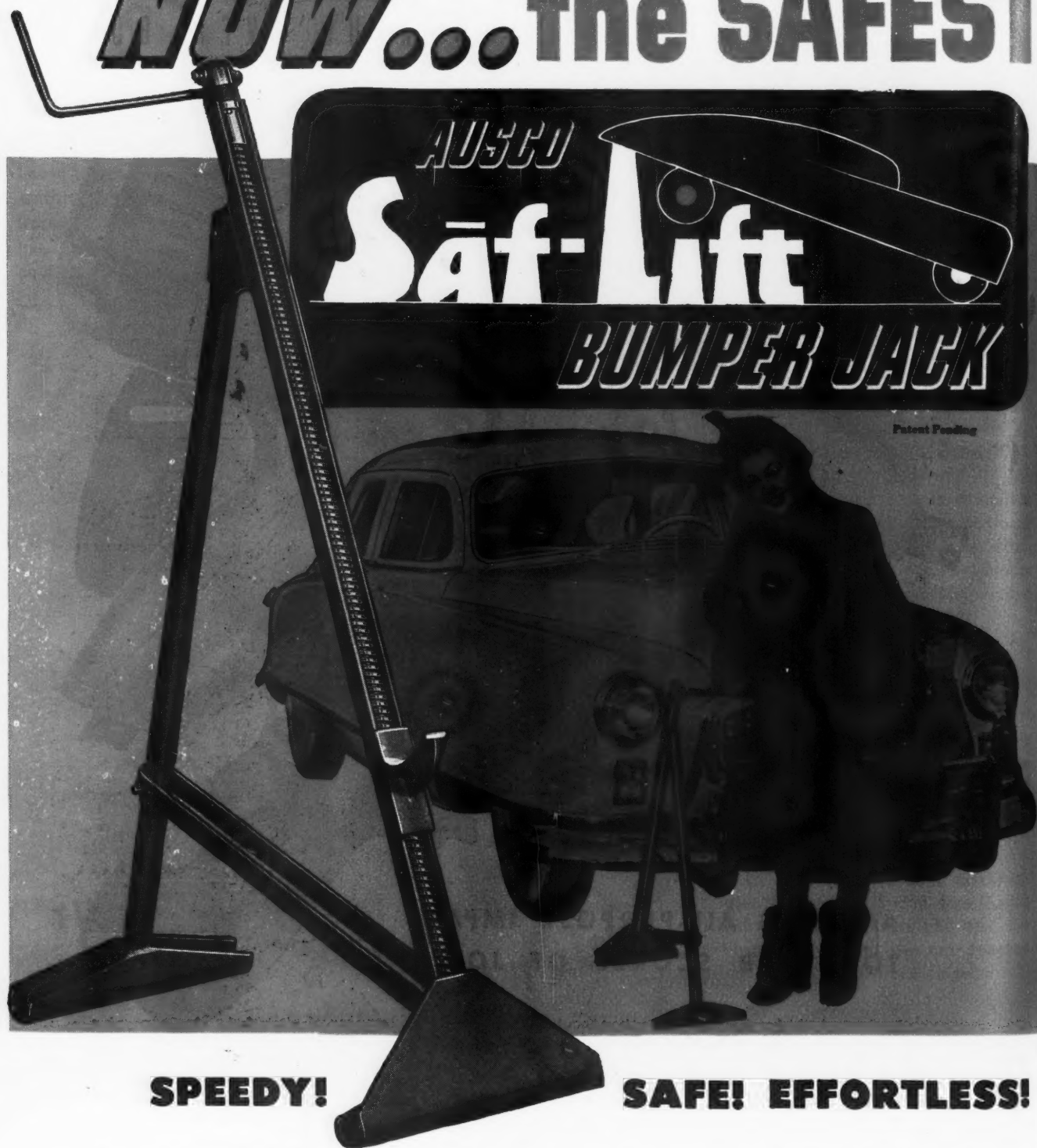
Aurora, Illinois
Export Division: 330 West 42nd Street, New York 18, N. Y.
Birmingham Boston Buffalo Chicago Cincinnati Cleveland Denver
Detroit Houston Los Angeles Milwaukee New York Philadelphia
Pittsburgh St. Louis St. Paul Salt Lake City Seattle
San Francisco Toronto, Canada Sao Paulo, Brazil London, England

Thor PORTABLE POWER
TOOLS

PNEUMATIC TOOLS • UNIVERSAL AND HIGH FREQUENCY ELECTRIC TOOLS • MINING AND CONTRACTORS TOOLS

MOTOR AGE, April, 1949

NOW... the SAFEST



SPEEDY!

SAFE! EFFORTLESS!

The revolutionary "bipod" construction of the **Saf-Lift** Bumper Jack assures a steady, firm, **SAFE** foundation. It's the newest development in the history of the bumper jack!

The **AUSCO Saf-Lift** is the **SAFEST** jack ever, the **SIMPLEST** to operate, the **FASTEST** to assemble, the most **CONVENIENT** and easiest to handle! The practical high position

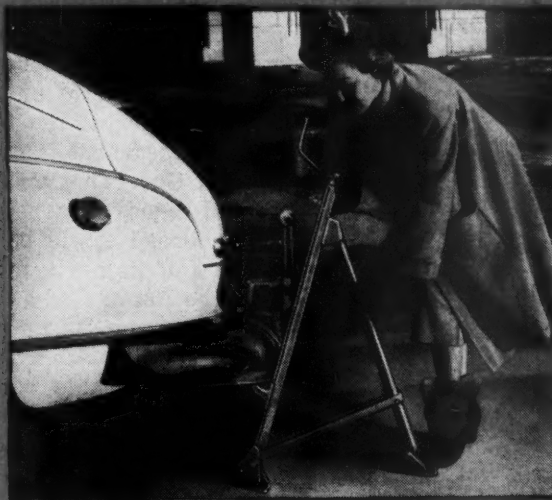
of the handle eliminates clumsy stooping and bending... lifts any car with an absolute minimum of effort.

The **Saf-Lift** Jack is all-in-one-piece, always ready to go to work instantly. Just set it up bipod-style. When the job is done, **Saf-Lift** folds up neat as an umbrella... fits conveniently into any trunk compartment.

See the **NEW Saf-Lift Jack** at your **Ausco Jobber TODAY!** Or write **Dept. MA-4** for full details.

ST JACK ever built!

Stands on its own two feet!



SIMPLE TO PLACE—just slip *Saf-Lift* under the bumper and turn the handle. Extra-low load rest position for trouble-free tire changing, even on late model low-dung cars.



EASY TO OPERATE, REAR OR FRONT—no need to bend or stoop... no strenuous pumping or cranking.

The Only Jack with All these Features

- Will raise any passenger car
- Safe, firm foundation
- Extra-high lifting range
- Sturdy construction
- Cross-support features safety lock
- A minimum of moving parts
- Rust and corrosion-resistant finish

AUSCO

Jacks

AUTO SPECIALTIES MFG. CO.

St. Joseph, Benton Harbor and Hartford, Michigan;
Windsor, Ontario, Canada



FOLDS UP IN A JIFFY...neat as an umbrella! Lightweight, easy to handle, fits into any trunk compartment with room to spare.



Copyright 1949 by Auto Specialties Mfg. Co.

R-3184

Legally Speaking . . . Continued from Page 144

its destination most of the goods had been ruined by water damage and the consignee refused to accept them. When the railroad was sued for the value of the goods it was shown that while the car was standing on the tracks there had been a sudden and unexpected flood from a nearby river which had overflowed the

railroad tracks and saturated the contents of the freight car to a depth of thirty inches.

The jury returned a verdict against the railroad for the value of the goods, but this was reversed by the Missouri Court of Appeals, which held that the railroad didn't have to pay, because the damage to the goods was the

indirect result of an "Act of God."

"An Act of God," said the court, "may be defined as a happening due directly, proximately and exclusively to a natural cause or causes, in no sense attributable to human agencies, which could not have been prevented by the exercise of such foresight, prudence and care as an ordinarily prudent person could reasonably have been expected to exercise under all the circumstances at the time.

"Unprecedented floods are Acts of God. That an Act of God caused a loss is a good defense. The railroad would be liable for the loss of its negligence mingled with the Act of God as a cooperative cause, providing the resulting loss were within the reasonable and probable consequences of the negligent act. But that negligence must be such that it not only concurs in the loss, but it must also have been such as could reasonably have been foreseen as a proximate cause of the loss.

"In the case before us there was evidence of an unprecedented flood, and by the flood, the goods were damaged. There is no evidence of concurring negligence on the part of the railroad."

The "Act of God" doctrine applies to a trucker or other carrier as well as a railroad. Most railroad bills of lading provide that the railroad shall not be liable for loss or damage due to an Act of God. (*M.F.A. Farmers Exchange vs. Kurn*, 205 Southwestern Reporter, second series, 878.)

ARO NEW Jobmaster KITS!



There is an Aro Jobmaster Tool Kit to meet all the requirements of EVERY automotive application in your shop, for car dealers, service stations, and garages.

3 Attractive Tool Kits—3 Attractive Price Ranges!

No. 2 Kit—(illustrated above) Seven dependable tools for 101 different jobs!

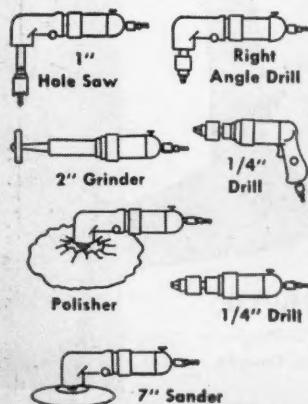
No. 3 Kit—Six tools in one for versatility!

No. 4 Kit—The Junior Kit for sanding, polishing and drilling operations!

See Your Aro Jobber Today! The Aro Equipment Corporation, Bryan, Ohio.

ARO AIR TOOLS
ALSO . . . LUBRICATING EQUIPMENT
HYDRAULIC EQUIPMENT . . . AIR-
CRAFT PRODUCTS . . . GREASE FITTINGS

7 TOOLS IN 1 KIT



"Maybe one of us ought to ride in the back and keep an eye on it."

We're pushing Purolator sales for you... lend a hand!

Look at these 7 great new sales boosters sparking Purolator's Spring drive to help you sell more oil filters!

• Starting with a big Spring explosion . . . and continuing with a steady bombardment throughout 1949 . . . Purolator is shouting the exclusive advantages of its new *Micronic Oil Filter* to car owners *everywhere!*

A smashing 2-color advertising campaign in nationally read magazines is making the car-owning public "filter-conscious," and creating a preference for *Purolator*.

In addition, Purolator gives you attractive, hard-selling, point-of-sale, direct mail, and numerous other merchandising aids to help build *your* Purolator sales and profits!

Get *your* share of the steady oil filter and refill profits all around you. Phone or write your Purolator supplier *now* for complete details!

1 BIG, HARD-SELLING ADS TO MOTORISTS EVERYWHERE!



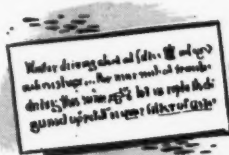
Over 60,000,000 readers are made "filter-conscious" by 2-color ads in THE SATURDAY EVENING POST, LIFE, TIME and other widely read magazines!

2 CUSTOMER-CATCHING DISPLAY AND STREAMER!



These attractive sales aids catch the eye of motorists driving into your place of business . . . break the ice for your sales talk on Purolator!

3 SALES COME-ON TO YOUR CUSTOMERS!



Here's a lighthearted yet meaty Purolator sales story in narrative form. Use it freely as an enclosure with bills—or as a throwaway!

4 "HOW TO DO IT" FOLDER OF SALE TIPS!



Action-illustrated to show you tested techniques of successful Purolator selling. Contains suggested stocks for greatest sales.

5 BRAND-NEW CATALOG WITH PUROLATOR "ANSWERS"!



Specifications catalog that also contains valuable selling information and product story. It helps you sell Purolator for greater profits!

6 CONVENIENT WALL CHART TELLS THE FILTER FOR EVERY CAR!



This helper saves valuable minutes in making Purolator sales. You can see at a glance the correct type of filter for your customer's car!

7 DRAMATIC NEW FILM SHOWS HOW TO SELL PUROLATORS!



Solid sales information and product story that *you* can combine for more Purolator sales. Look to your nearby Purolator representative for an announcement!

PUROLATOR
MICRONIC OIL FILTER

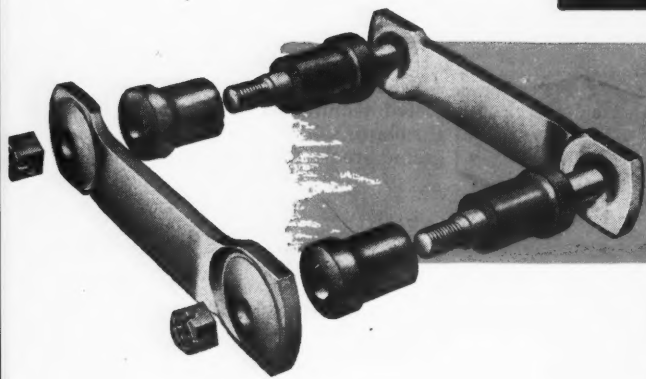
"FIRST IN THE FIELD OF FILTERING"

PUROLATOR PRODUCTS INC.

Newark 2, New Jersey and Windsor, Ontario, Canada

DESIGNED AND DEVELOPED FOR THE CAR INDUSTRY .

HARRIS

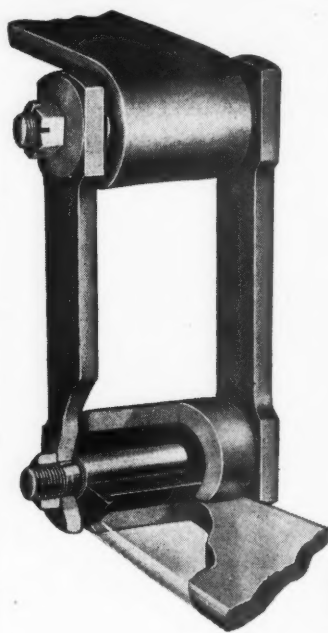


"CP" CONCENTRATED PRESSURE SPRING SHACKLES

**NOW AVAILABLE
FOR REPLACEMENT SERVICE**
from
**AUTOMOTIVE
JOBBERs**

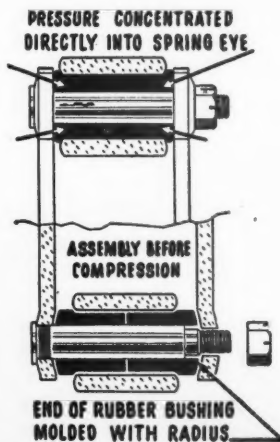
Supplied by Leading
NATIONAL DISTRIBUTORS
of
**FACTORY APPROVED
PARTS**

Thoroughly proved performance
as original equipment on 9 lead-
ing 1949 models.



HARRIS CONCENTRATED PRESSURE SPRING SHACKLES

4 to 6 times
NORMAL
SPRING SHACKLE
LIFE



- Easily assembled.
- Concentrating pressure within spring eye increases shackle life—permits much higher unit loadings without increasing size and cost of shackles.

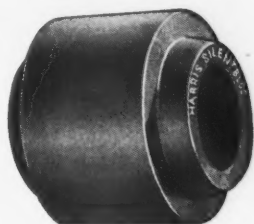
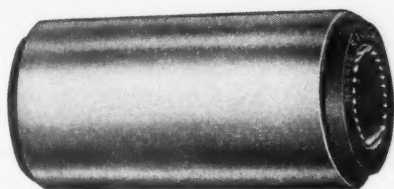
HARRIS

Originators and Designers of the first rubber bushings specifically developed for the motor car industry in 1932—for spring shackles, fixed ends and shock absorbers.

RY *Genuine* FACTORY APPROVED

HARRIS

S FIXED END BUSHINGS

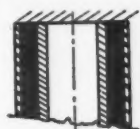


HARRIS SILENTBLOC FIXED END BUSHINGS



NO LOAD

Reduced diameter extension provides "Free Zone" between rubber and outer sleeve.



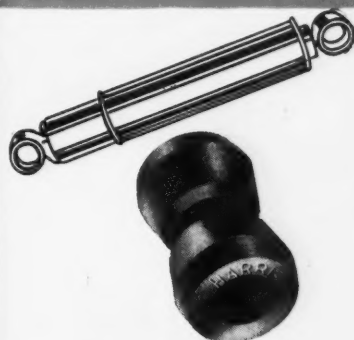
UNDER AXIAL LOAD (Side Sway)

Extended section compresses within outer sleeve without destructive pinching.

"FREE ZONE" ELIMINATES DESTRUCTIVE PINCHING

The design of the Harris extended Silentbloc fixed end bushing, by the use of a "Free Zone" between rubber and metal at the ends of the bushing, as illustrated above, eliminates the destructive pinching which has heretofore been the chief factor in the failure of fixed end parts.

HARRIS CONCENTRATED PRESSURE SPRING SHACKLES AND SILENTBLOC FIXED END BUSHINGS ARE EASILY INTERCHANGEABLE WITH SHACKLE AND FIXED END PARTS ON A GOOD PERCENTAGE OF EARLIER MODEL CARS.



HARRIS SHOCK ABSORBER BUSHINGS

The first rubber shock absorber bushings originally used by motor car manufacturers were designed and developed by Harris.

Look for the name Harris on all rubber bushings included in shock absorber service parts kits. It is your guarantee of a factory approved part specially designed for a specific application.

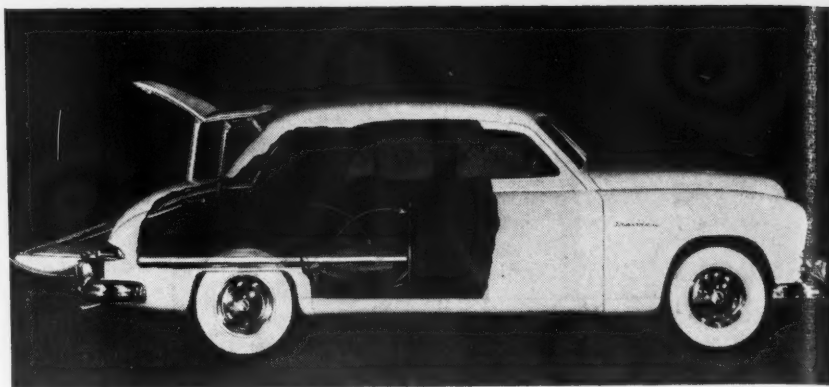
HARRIS PRODUCTS COMPANY

GENERAL MOTORS BLDG. • DETROIT 2, MICHIGAN

MAIN OFFICE AND FACTORY • 5105 COWAN AVE. • CLEVELAND 4, OHIO

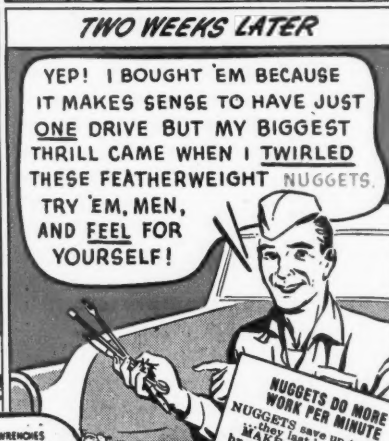
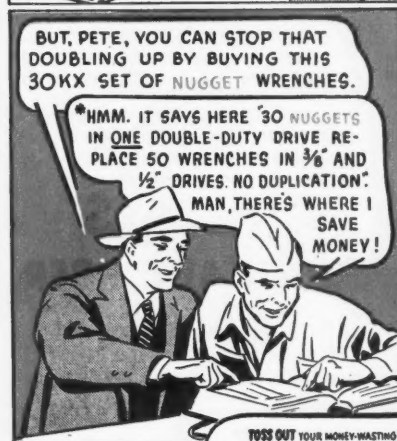
K-F Introduces New Model Called the "Traveler"

Kaiser-Frazer Corp. has a new six-passenger automobile which is designed to combine the cargo features of a station wagon and the appearance of a four-door sedan. Identified as the Traveler, the model is one of two new Kaiser "utility" sedans which are built to carry miscellaneous loads of merchandise, tools or camping



ANOTHER PROFESSIONAL
MECHANIC DISCOVERS

***30 BEATS 50**



TOSS OUT YOUR MONEY-WASTING WRENCHES
BEAT THE CLOCK WITH NUGGETS
THEY PAY FOR THEMSELVES BY
RATE-BUSTING

Available for immediate delivery

BLACKHAWK® NUGGETS® SOCKET WRENCHES
HAND JACKS • SERVICE JACKS • PORTO-POWER • RECK-RACE

MAIL THIS COUPON TODAY!

to **BLACKHAWK MFG. CO., Dept. W649, Milwaukee 1, Wis.**

Please send me
RUSH your FREE
booklet on Rate-
Busting Nugget
Socket Wrenches.

NAME.....
ADDRESS.....
CITY.....STATE.....

equipment, and also to serve as family transportation. The Traveler retails at the factory for \$2,088. The Vagabond, a luxury companion model styled for the "estate wagon" field, will be higher.

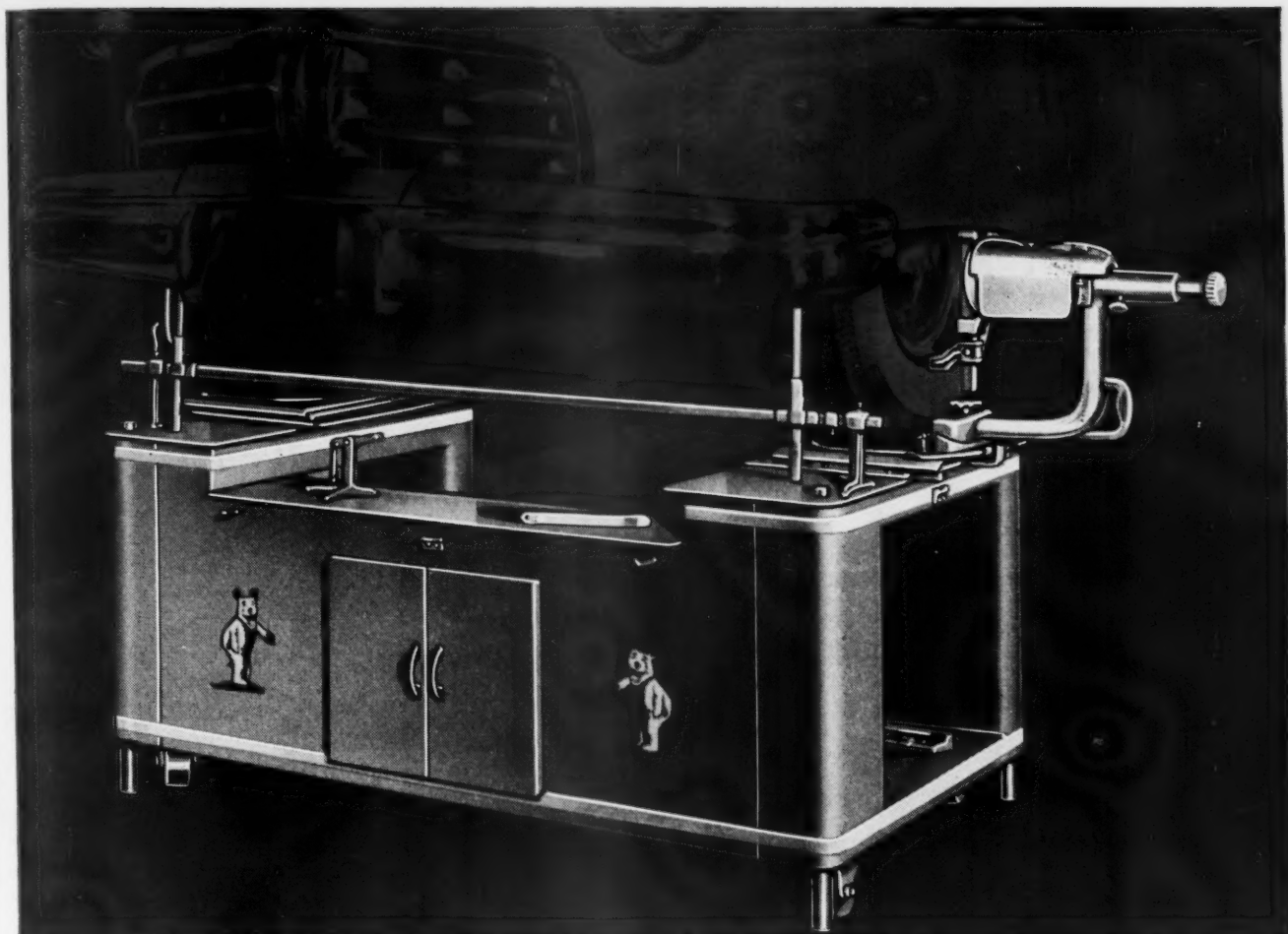
Although the utility cars incorporate more than 200 changes as compared with K-F sedans, their dual-purpose adaptability is gained from two simple design features. One is a collapsible seat arrangement which allows the rear passenger cushions to be folded away in 10 seconds to convert the car for cargo hauling. The other is the design of the rear of the car. Instead of the single trunk lid of conventional sedans, the Traveler has two large hinged panels which enable the owner to open the entire back of the car from floor to roof.

The lower section opens downward to provide a tailgate. The second panel, which includes the rear window, is hinged from the roof and lifts upward. With both panels open and seat cushions folded, a cargo space of 130 cubic feet is accessible.

With the back seat in upright position, the cars seat six passengers and also provide 78 cubic feet of useable space.

With a wheelbase of 123½ in., both cars are equipped with heavy duty front and rear springs and heavy duty shock absorbers. The Traveler is powered by the economical six-cylinder, 100-horsepower engine used in the Kaiser Special sedan.

The outstanding mechanical feature of the Vagabond is its 112-horsepower Thunderhead engine with dual-throat carburetion. Overdrive is available as optional equipment.



make EXTRA income without EXTRA space!

With the new **LIFT-ALINER**
you can make any two-post lift
an **ALINEMENT STATION!**

Now you can cash-in on high profit wheel alining without using an extra inch of floor space! The new Bear "1131" Lift-Aliner will service any number of two-post lifts and enable you to do complete, 5-point alinement checking. The Lift-Aliner can be used on any type of floor, indoors or out. It stores out of the way quickly, conveniently and an ample size cabinet space holds all of the necessary tools.

What's more, the Lift-Aliner makes alinement work *easy-to-sell!* It's an easy matter to sell your customer an alinement check when his car is on the lift for other services. Full details on the new "1131" Lift-Aliner are contained in the new "1131" Bulletin just off-the-press! Write for your copy *today!*

BEAR SAFETY SERVICE

WHEEL ALINEMENT... BALANCING...
HEADLIGHT AND BRAKE TESTING

POST

R-2964R

NATIONALLY ADVERTISED IN...



**This New FREE
Bulletin Tells
You How...**

to get EXTRA income out of any two-post lift. It shows all of the outstanding features of the Lift-Aliner that opened an entirely new field in wheel alinement profits.

SEND FOR YOUR FREE COPY TODAY!

BEAR MFG. CO., Dept. M-1
Rock Island, Illinois

Without cost or obligation, please send me a free copy of the Bear "1131" Lift-Aliner Bulletin.

Name.....

Company.....

Address.....

City..... Zone..... State.....

Personals

George H. Kent has been appointed Director of Sales for E. F. Drew & Co., Inc., New York, N. Y. In this capacity Mr. Kent will be responsible for the coordination of all sales activities of the operating divisions of the Drew Company.

C. S. "Chuck" McIntyre, III, son

of B. D. McIntyre, president of the Monroe Auto Equipment Company of Monroe, has been appointed service manager of the company.

Robert A. Smith has been promoted to the position of Sales Manager of the Hy-Pro Tool Company of New Bedford, Mass., a division of Continental Screw Co.

W. F. Hinderscheid, for the last four years in charge of Lee Rubber and Tire Corporation sales to



petroleum companies has been named Vice President in Charge of Sales of the Lee Tire and Rubber Company of New York, Inc., a wholly owned subsidiary.

Herbert E. Smith, formerly president of United States Rubber Company, is now chairman of the board and chief executive officer of the company, and Harry E. Humphreys, Jr., vice-president and chairman of the finance committee, will become president and chairman of the executive committee.

W. B. Merriam has been elected to the position of president of Globe Products Manufacturing Co., Los Angeles, Calif. R. E. Lockhard was elected vice-president in charge of sales.

George E. Stoll and Lawrence A. Hyland have been elected as vice-presidents of Bendix Aviation Corporation. Mr. Stoll has, since 1946, been general manager of the Bendix Products Division, South Bend, Ind. Mr. Hyland, formerly executive engineer of the company, will be in charge of Bendix Aviation research.

Neil A. Moore has been appointed vice president in charge of Federal-Mogul Service division. He recently joined Federal-Mogul Corporation after many years with Sealed Power Corp., piston ring manufacturers. Rogers I. Marquis has been made vice president in charge of industrial relations for Federal-Mogul Cor-
(Continued on page 156)

LINE UP WITH LION

IN 49

for the MOST COMPLETE
COVERAGE IN THE AUTOMOTIVE FIELD

UNIFORM BOXING

LION AUTO PARTS

and MANUFACTURING CO., Inc.

1920 SO. MICHIGAN AVE. • CHICAGO 16, ILLINOIS

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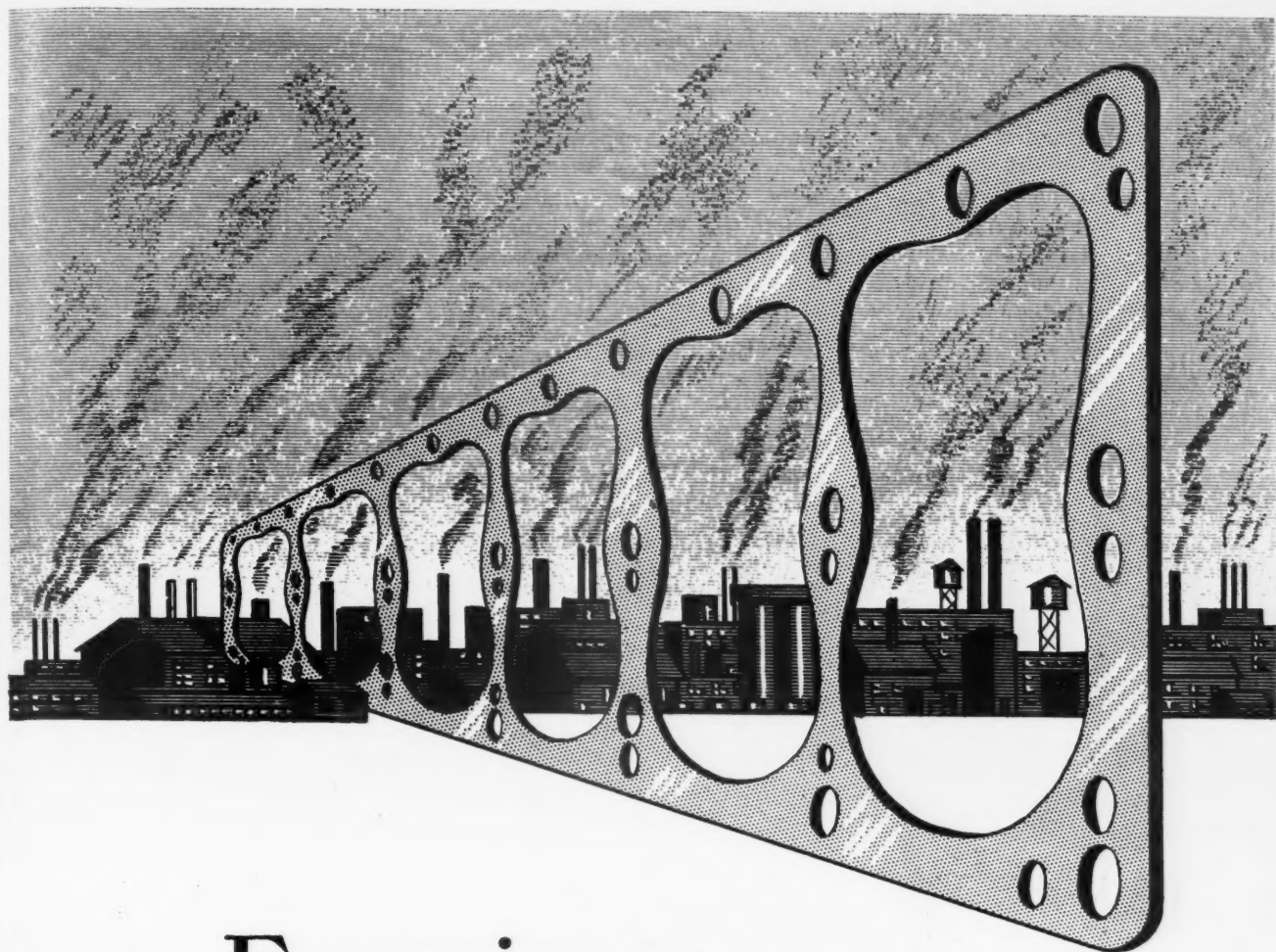
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il, 1949



Fel-Pro's Experience is

your Guarantee of Outstanding Gasket Performance

WHEN you use Fel-Pro Replacement Gaskets you are cashing in on gasket making experience covering over a quarter of a century. You are getting the same high quality and precision workmanship which Fel-Pro delivers by the millions to leading American industrial manufacturers and car factories.

That is why all Fel-Pro Gaskets are **GUARANTEED TO SATISFY** or money refunded! That's why Fel-Pro Gaskets

are completely guaranteed against defects of materials and workmanship...why you can depend on Fel-Pro's experience for outstanding Gasket Performance!

Whatever your needs, Fel-Pro can supply them from the complete line of Fel-Pro Head Gaskets, Full Gasket Sets, Valve Grinding Sets and Individual Gaskets for every make of car, bus and tractor.



Write for your **FREE** new "QUICK-REFERENCE" Catalog Today!



STOP every "DRIP"
and keep him stopped
—use **FEL-PRO!**



FELT PRODUCTS MFG. CO.
1521 Carroll Ave., Chicago 7, Ill.

Send my **FREE** copy of the new Fel-Pro "Quick-Reference" Catalog today.

Name.....
Company.....
Address.....
City..... Zone..... State.....

R-3073

MOTOR AGE, April, 1949

poration. **Ernest R. Darby**, vice president in charge of research and **M. A. Hunter**, vice president in charge of manufacturing for all six of the Federal-Mogul Corporation's plants producing automotive engine bearings.

C. A. Dana, president of Spicer



Manufacturing Corporation for 30 years and, since 1946, president of its successor, Dana Corporation, was elected chairman of the board at the annual organization meeting of Dana Corporation held in New York City recently. **R. E. Carpenter**, formerly executive vice president, succeeds Dana as president of the corporation.

Morris H. Wright has been elected to the office of Vice President in charge of Finance for The Weatherhead Company. In June of 1946, Mr. Wright was made Treasurer of the company—a position which he will continue to hold in addition to his newly acquired responsibilities.

Jack J. Braude, of Los Angeles, has been appointed as general sales manager of the Badger Tool and Manufacturing Co., Inc., of Chicago, Ill.

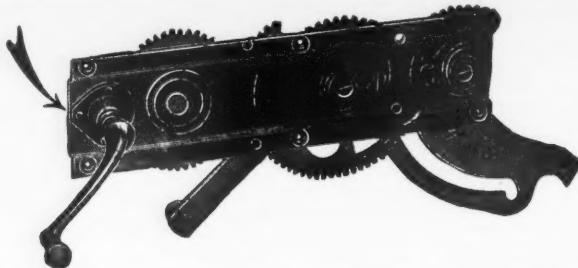


Carlos D. Kelly has been elected vice-president in charge of sales by Purolator Products, Inc.

M. A. Harvey, Vice President of the Auto-Lite Battery Corporation, is now President of the Association of American Battery Manufacturers, Inc.

QUICK REPAIR for WINDOW REGULATORS

The Champ-Items Window Regulator Repair Kits eliminate the necessity of carrying a large inventory of window regulators. Takes 5 minutes to repair the old regulator. Pinion gear made of hardened steel, will last indefinitely. Kit contains all the necessary parts and complete instructions.



No. 978 For V-8 and Model "A" Ford Cars and Trucks (6-Tooth Pinion) 1928-1940

No. 978A For V-8 and Model "A" Ford Cars and Trucks (5-Tooth Pinion) 1928-1940

No. 978B For V-8 Ford and Mercury 1941-1947

No. 985 For Plymouth, Dodge, DeSoto & Chrysler (5-Tooth Pinion) 1930-1941

No. 986 For Plymouth, Dodge, DeSoto & Chrysler (6-Tooth Pinion) 1930-1941

No. 994 Window Regulator Repair Kit Assortment for all cars available with 12 kits for quick servicing. List price \$1.25 per Kit

No. 991 For Chevrolet, Pontiac, Buick & Oldsmobile 1929-1938

No. 992 For Chevrolet, Pontiac, Buick & Oldsmobile 1939-1940

No. 992A For Chevrolet Cars and Trucks 1941-1947

No. 993 For Chevrolet Trucks (5-Tooth Pinion) 1930-1940

No. 993A For Chevrolet Trucks (6-Tooth Pinion) 1930-1940



ORDER FROM
YOUR JOBBER

CHAMP-ITEMS, INC. 6191 Maple Ave. • St. Louis 14, Mo.

Pay for Themselves Right from the Start

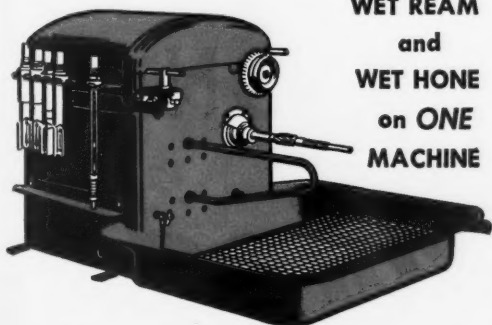
As few as 2 and 3 jobs a week will pay for most machines within the first year. In many cases little or no investment is involved, as the machine earns its way right from the start.
Don't overlook profits that are easily made. Let's tell you how to increase your shop earnings. Send coupon for details.

SPEEDMASTER

2

ReamORhone

WET REAM
and
WET HONE
on ONE
MACHINE



Without question the fastest, most precise reaming and honing operation in the automotive repair field. Perfect holes, no bell mouthing, mirror-like finish. Dial on machine gives micromatic blade expansion for both reaming and honing.

EXPANDABLE DUAL SPIRAL WET REAMER

**Micro-Accurate, leaves
Mirror Smooth Finish**

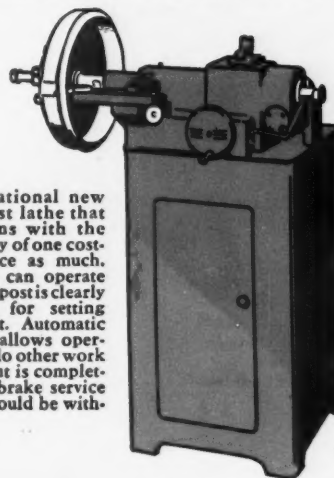
Has all the advantages of the dual spiral dry reamer plus faster, cooler and smoother cutting that produces superbly finished piston pin fittings. One set of blades can be used constantly at spindle speed of 230 rpm for five full days without evidence of wear or need of resharpening. Can be used on any Webster or Lempco honing machine.



4

Sensationally Priced BRAKE DRUM LATHE...PAL

3



A sensational new low-cost lathe that performs with the efficiency of one costing twice as much. Anyone can operate it—tool post is clearly marked for setting tool bit. Automatic shutoff allows operator to do other work while cut is completed. No brake service shop should be without it.

5 ROD AND INSERT RESIZING MACHINE

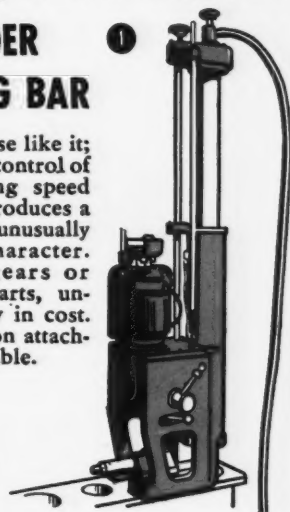
You can reduce your rod and insert bearing stock by 50%! Just keep a few key undersizes, yet have a complete rod and bearing service by resizing them with this rod and bearing insert resizer.

6 MOBILCRANE

Use the Mobilcrane to lift the front or rear of cars during repair operations; for moving cars in showrooms; for unloading crates from trucks and stacking heavy boxes. 1 and 2-ton models.

Absolutely New HYDRAULIC CYLINDER BORING BAR

1



Nothing else like it; Hydraulic control of both cutting speed and feed produces a surface of unusually smooth character. No dry gears or wearing parts, unusually low in cost. Chip suction attachment available.

7 WET SURFACE GRINDER

Trues up all flat surfaces. Micro-matic wheel-raising unit compensates for grinding wheel wear. Wet-surface grinding eliminates all dust and prevents heat distortion during grinding process.

8 ALIGN BORING MACHINE

Enables mechanics to do fast production work aligning and boring main bearings on Ford, Plymouth and Chevrolet blocks. Turns out 100% accurate jobs. Can be set up in a few minutes.

9 HYDRAULIC PRESSES

Two speed ram operation cuts mechanic's time on pressing, bending, straightening and riveting jobs. Turn a knob and the press shifts from slow to fast pumping speed on work that requires lower pressure but greater ram travel.

10 BENCH GRINDERS

Built to last a lifetime. Two wheels included as standard equipment, one for roughing, one for finishing. All-angle tool rest is adjustable for accurate tool sharpening, regardless of wheel wear.

11 VALVE REFACER

Refaces all passenger car and truck engine valves. Fast, accurate valve refacing is easy with this machine. Chuck holds stems from $\frac{1}{4}$ " to 1" in diameter. Grinding wheel can be adjusted to reface heads from $\frac{3}{4}$ " to 5" in diameter. Easy to set up.

SEND COUPON
FOR
DETAILS

LEMPCO

PRODUCTS, INC.

5490 DUNHAM ROAD
BEDFORD, OHIO

LEMPCO PRODUCTS, INC.
5490 DUNHAM ROAD
BEDFORD, OHIO

Gentlemen:

Kindly send details on the following equipment—

1 2 3 4 5 6 7 8 9 10 11

NAME _____

ADDRESS _____

CITY _____

NEW

in a tremendous

PROFIT FIELD*

LION

Nokorode

UNDER-CAR SEALER AND SILENCER

Here's an undercoating you can apply and sell with confidence because its quality is uniformly superior...entirely produced by Lion from raw material to finished product, under U. S. Patent No. 2393774.

Nokorode's controlled quality and uniformity assure ease of application and customer satisfaction.

If you've tried selling another undercoating, get into the *real* profit field with *superior* Lion Nokorode. And if you haven't yet entered into this *proven*, profitable business, by all means call or write Lion Oil Company, El Dorado, Arkansas, for full particulars.



An estimated 40 million cars and trucks need underbody coating.

LION OIL COMPANY

El Dorado, Arkansas





Barrett Says:
You Need-

THESE BRAKE SERVICE HELPERS!

SAVE TIME, TROUBLE AND EXPENSE! YOUR BARRETT JOBBER CAN SUPPLY ALL THESE ITEMS FROM STOCK!

SPECIAL TOOLS

BRAKE SUPPLIES

BRAKE EQUIPMENT

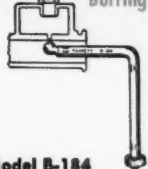
BRAKE DEPARTMENTS

1 Hydraulic Cylinder Clamps



Model B-174 Slide Type
Model B-175 Spring Type
Model B-182 Single End Type

2 Hydraulic Cylinder Burring Tool



Model B-184

3 No-Go Gauges



Model B-150 Passenger Set
Model B-151 Universal Set

4 Lathe Cutters



Carbide Tipped. For popular makes of lathes.

5 Barrett Countersinks



High Speed and Carbide Tipped Countersinks for all makes of Reliners.

6 Carbide Grinding Wheel



No. 44

7 Sanding Sleeves



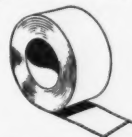
No. 26—3" x 3"
No. 27—3" x 6½"

8 Brake Lining Filler Cement

Available in 2½ oz. tubes, pints, quarts and gallons.



9 Roll Shim Stock



All popular sizes and thicknesses.

10 Cut-Length Shim Stock

16 sets cover complete passenger car range.

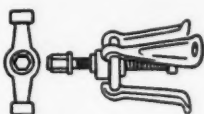


11 Ford Shoe Centralizer



Model B-168
Set of 4

12 Wheel Puller



Model B-176

13 Brake Spring Tongs



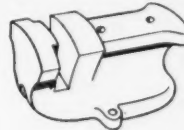
No. 225

14 Brake Lining Clamps



Model B-130 Passenger
Model B-131 DeLuxe Passenger
Model B-132 Bus and Truck

15 Brake Shoe Anvil



Model B-18

16 Axle Thread Protectors



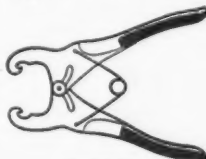
Model B-179—Set of 6

17 Ford Adapter For Wheel Puller



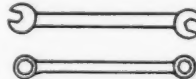
No. 214

18 "C" Washer Pliers



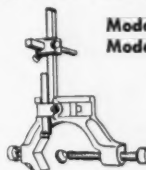
Model B-173

19 Special Brake Wrench Sets



Model B-200 DeLuxe Set
Model B-201 Standard Set

20 Brake Shoe Gauges



Model B-169
Model B-170

21 COMPLETE BRAKE SERVICE DEPARTMENTS

Modern And Efficient
—A Real Profit Maker

—Each A
Packaged
Unit

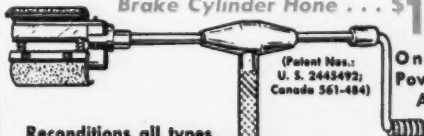


B-1
Passenger Car Dept.

B-2
Passenger Car and
Truck Dept.

(Complete B-2 Illustrated)

22 The HAND-E-HONE—A Hand-Powered Brake Cylinder Hone . . . \$19.75



(Patent Nos.:
U. S. 2445492;
Canada 561-484)

Only Hand-Powered Hone Available

Reconditions all types wheel cylinders in fraction of usual time. Can be used with power chuck.

Set B-215 For Universal Service Range ¾" to 1½" \$19.75

Individual Hones for tool kits ¾" to 2" \$7.50 to \$8.50 Ea.

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Please send details on the following: 1 2 3 4 5 6 7

8 9 10 11 12 13 14 15 16 17 18 19 20 21 22

Company _____

Address _____

City & State _____

Signed _____

Please have representative call.

40



BARRETT EQUIPMENT CO.

The World's Finest Brake Service Equipment

21st and CASS AVENUE • ST. LOUIS 6, MISSOURI

INTRODUCING

America's finest hydraulic bumper jack

THE WALKER "903"

● Here is a truly great, new passenger car jack . . . a jack that surpasses all previous standards of strength . . . of safety . . . of performance and utility—the new Walker "903"!

Never before has there been a jack so versatile . . . a jack so handsome—and yet beneath its streamlined, eye-catching beauty is all the stamina . . . the ruggedness . . . the smoothness that marks a champion.

Yes, it does cost more than "mine-run" hydraulic jacks—because it's worth more! Its finer precision engineering . . . its greater strength and reliability were conceived for those motorists who want and can afford the finest. It was never designed for the "penny-savers." It was built for discriminating buyers who understand from experience that real, unflinching quality is the greatest economy of all!

Of course, it handles all cars—even those with the deepest skirted fenders. Of course, it raises them high enough to change a wheel—that is what any jack is supposed to do!

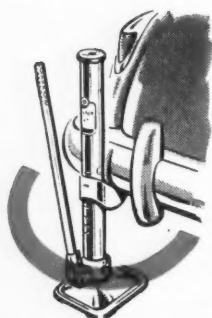
More important to the motorist is to own a jack that becomes part of his personal possessions—because he has confidence in it—because it serves him well—because it never fails him when he needs it most. . . . Such a jack is the new Walker "903"—America's Finest Hydraulic Bumper Jack!

NEW
STRENGTH

NEW
SAFETY

NEW
UTILITY

NEW
CONSTRUCTION



NEW ADJUSTABILITY HELPS AND PROTECTS OPERATOR

The new Walker "903" can be operated from any desired position within 180°—simply by rotating the pump. This exclusive Walker feature permits the user to work safely and easily regardless of the position of his car or the position of the car in front or behind.

- Extra Top Column Lifting Position
- Convenient "Stand-Up" Operation
- Large "Gravity Centered" Removable Base
- Extra Strong Lifting Column
- Precision-Built Hydraulic Power Unit
- Handsome "Two-Toned" Metalescent Finish

Individually Cartonized for Convenient Storage

WALKER MANUFACTURING COMPANY OF WISCONSIN • RACINE, WISCONSIN
Also makers of Walker Silencers, Electric Lifts and Oil Filters

WALKER LEADS IN JACKS



Play safe for Fall—



Place your order NOW!

This is good advice. Every day now you realize that people are getting more particular about the products they buy. They demand brands *by name*.

To meet that demand and to make the most profit, it's smart to stock *the most popular* brands. That's why you should make sure *now* that you'll have Du Pont "Zerone" and "Zerex" anti-freeze for this fall.

"Zerone" and "Zerex" are technically outstanding, as you might expect from Du Pont chemists. They are a team that meets all competition—the brands that satisfy the choosiest buyer.

More motorists ask for—and buy—"Zerone" than any other anti-freeze, because it's the type that suits the needs of 80 per cent of all motorists. And when it comes to the permanent type, "Zerex" is the product developed by Du Pont research for those who demand the best.

Your wholesaler is receiving deliveries of "Zerone" and "Zerex" earlier this year than ever before. Take advantage of this fact. Make certain you get your fall supply of Du Pont anti-freeze by accepting delivery of "Zerone" and "Zerex" now.

"Zerone"*—Tops for economy. Recommended for light and medium-duty vehicles with normal opening thermostats. "Zerone" needs only an occasional check-up. A special Du Pont chemical inhibitor retards rust and corrosion—helps keep a clean cooling system clean.

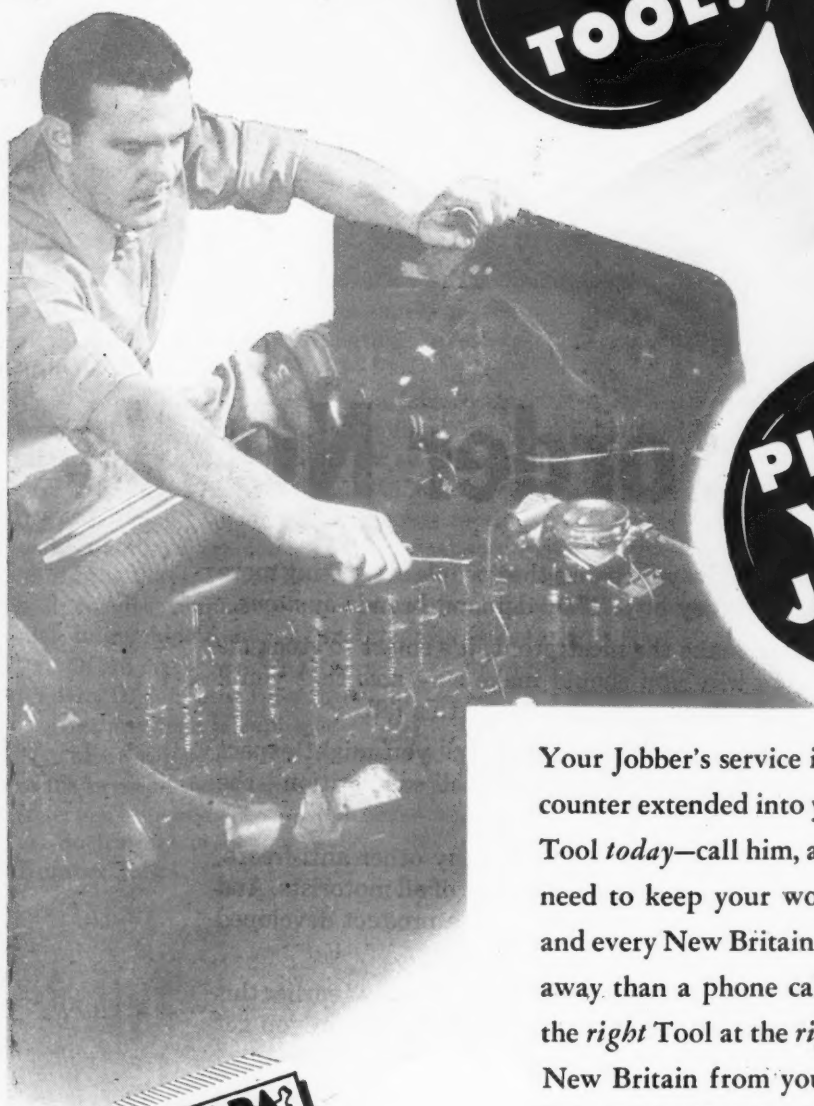
"Zerex"*—Du Pont's permanent type—one filling lasts all winter in a properly serviced cooling system. Ideal for heavy-duty vehicles, for high altitudes and for motors with high opening thermostats. Like "Zerone," "Zerex" contains a special chemical inhibitor to protect against rust and corrosion.

*Reg. U. S. Pat. Off.



BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

*Your phone brings your
jobber's counter
right to
your shop*

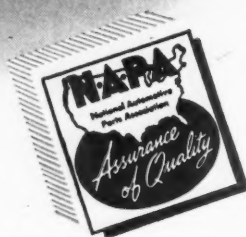


**NEED
A
TOOL?**

**PHONE
YOUR
JOBBER**



Your Jobber's service is as quick and convenient as if his counter extended into your shop! When you need a Hand Tool *today*—call him, and you'll get it—*today*! There's no need to keep your work and your profits waiting. Any and every New Britain Tool you'll ever need is no further away than a phone call to your automotive Jobber. For the *right* Tool at the *right* time—when *you* need it—order New Britain from your Jobber BY PHONE! The New Britain Machine Co., New Britain, Conn.



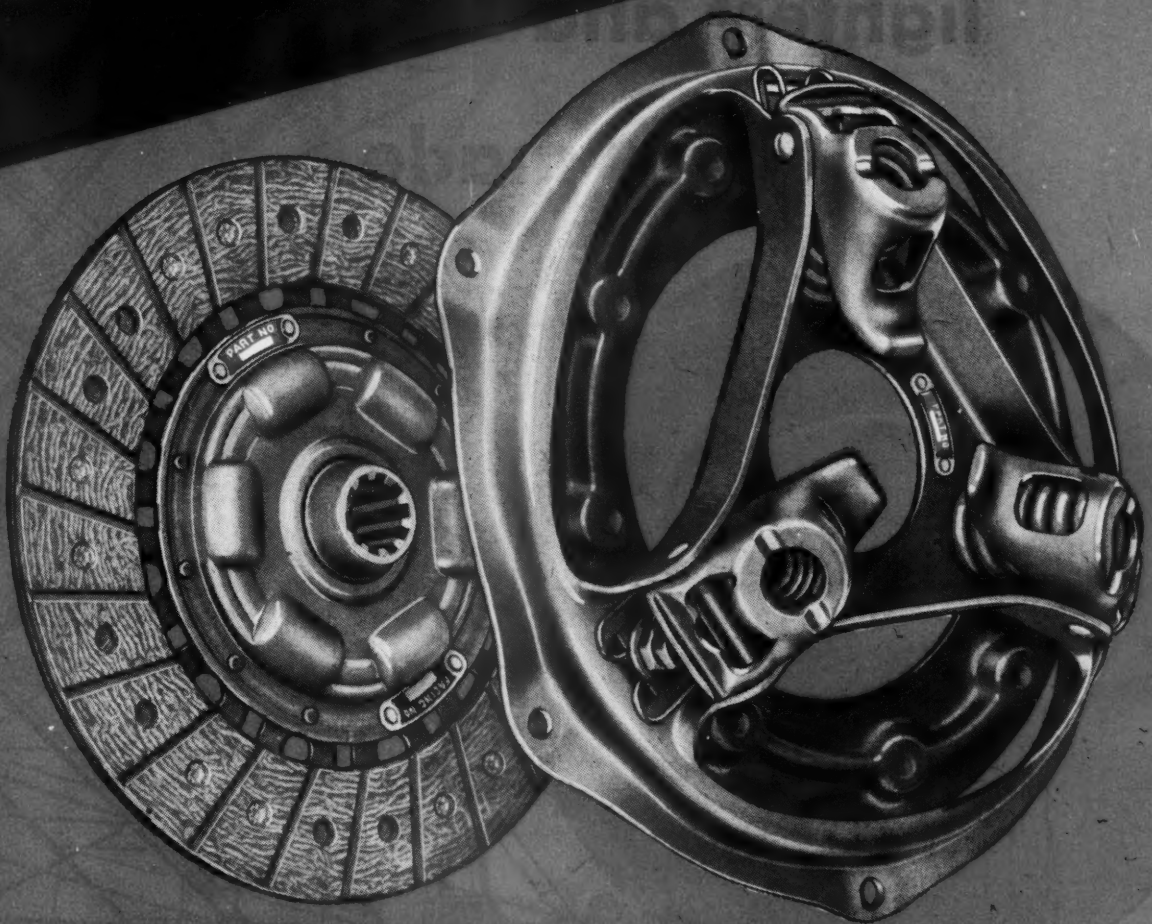
New Britain

GREATER STRENGTH • BETTER FIT

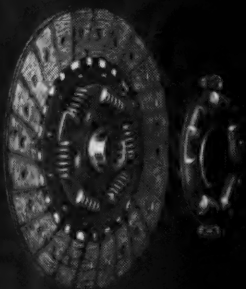
HAND TOOLS

AUBURN CLUTCHES

*Over three million
now in service*



FOR CARS • TRUCKS • BUSES • TRACTORS



COVER REMOVED
TO SHOW
CONSTRUCTION

- Patented Flexible Hub Center
- Torsional Heavy Spring Vibration Dampers With Two-Way Shock Absorber Action
- Patented Spring Cushion Feature Gives Smooth Engagement And Full Facing Contact Pattern
- B.L.M.A. Drilled Facings

- Springs Do Not Contact Pressure Plate—Gives Longer Spring Life
- Leverage Multiple Gives Soft Pedal And Full Facing Pressure
- Stiff "Channel Section" Cover
- Open Cover Design—Runs Cooler
- Rigid Ribbed Pressure Plate

Approved and Accepted as Original Equipment since 1937. Now also available for replacement. Manufactured in a new, modern plant equipped with mass production machine tools for an annual capacity of over a million complete clutch assemblies and plates.

AUBURN CLUTCH CO.

WAREHOUSE STOCKS IN 39 MAJOR DISTRIBUTING CENTERS

DANA PRODUCTS

AUBURN CLUTCH CO.

DIVISION OF DANA CORPORATION

AUBURN, INDIANA, U.S.A.



New Lyon Stainless Spring

**lightest and strongest
ever made**



LIST

\$14⁹⁵

SET OF FOUR

*weighs less than ordinary hub cap and
covers the entire wheel! Unexcelled for
durability and dent-resistance!*



g Steel Wheel Cover



192,000 LBS. P.S.I.

Tensile Strength

Here is the best wheel cover buy on the market! Here is merchandise that will back to the limit everything good you say about it! Lyon designers and engineers proudly present this new standard model stainless spring steel wheel cover as the last word in beauty and durability—the lightest and strongest ever built! The terrific tensile strength which Lyon works into stainless steel gives this new accessory remarkable new dent-resistance power; normal bumps often can be pushed out by hand! And notice the price . . . the lowest ever offered! Your own experience will tell you that here's an item that's headed for really big mass-market volume. Two sizes fit all 15" and 16" wheels. Order now from your regular supplier.

*A Fair Trade product sold under
applicable Fair Trade Laws*

PRICED SLIGHTLY HIGHER IN CANADA

LYON INCORPORATED, 13881 W. CHICAGO BLVD., DETROIT 28, MICH.

Look

at

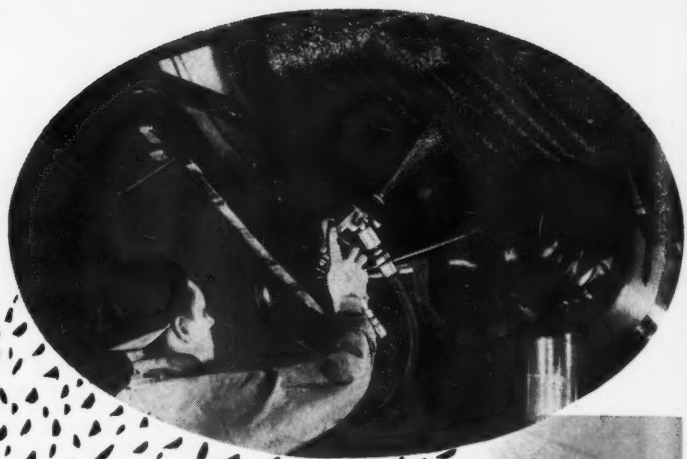
The FENDIX Deal

.. and you'll know why
it pays to

FIRST

find out about

FENDIX



You Get This COMPLETE "PACKAGED PLAN"

WE HELP YOU make sure that your undercoating operations are on the most profitable, efficient basis possible.

WE HELP YOU train your spray men in correct, trouble-free application methods.

WE HELP YOU instruct your sales force in modern, business-building techniques.

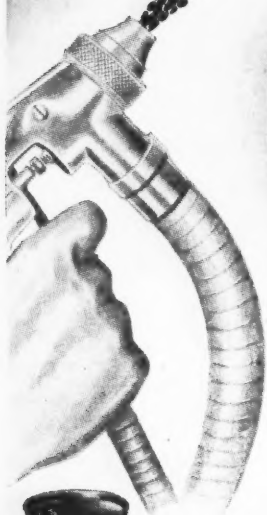
WE HELP YOU by serving in the capacity of Mr. Fix-It should equipment problems arise.

WE HELP YOU by supplying an underbody material which gives more coverage per drum! With Fendix, only a $\frac{1}{16}$ " coating is needed for maximum rust protection and superior sound deadening . . . Fendix goes on uniformly, gives continuous coverage of the underbody, sprays in solid particles without mist or fog.

WE HELP YOU by providing plenty of free sales helps with which to build your undercoating business.

**"See Your Jobber" or write direct
for complete details . . . address Dept. 6**

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THE DAVISON CHEMICAL CORPORATION
BALTIMORE-3, MD.



Sells as fast and easy as it sprays

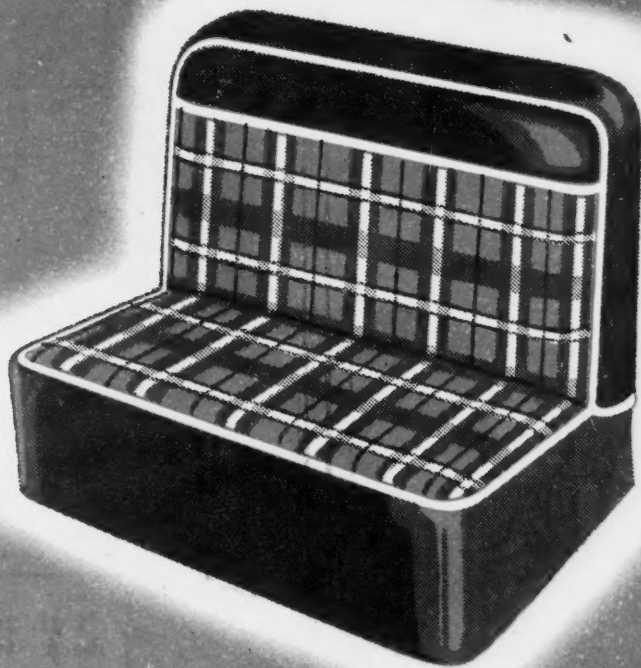
for...

WEAR

QUALITY

APPEARANCE

MORE SALES



it's

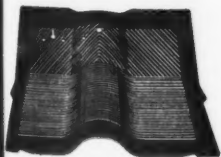
DESIGNED and CUSTOM TAILORED for perfect fit and easy installation. ALL seams are double stitched and overlocked for strength. Contrasting beading trim.

PLAS-TEX • SATIN-TEX • SEA-TEX

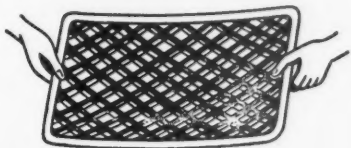
Three Great Leaders in the SEAT COVER field.

"SURE-FIT"

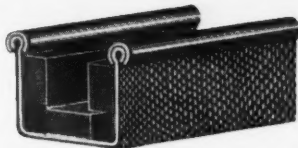
AUTO SEAT COVERS and AUTOMOTIVE ACCESSORIES



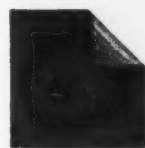
REPLACEMENT MATS



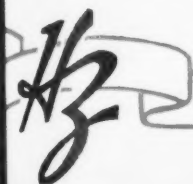
MULTI-CELLED FLOOR MATS



WINDOW CHANNELS



AUTO CARPETING

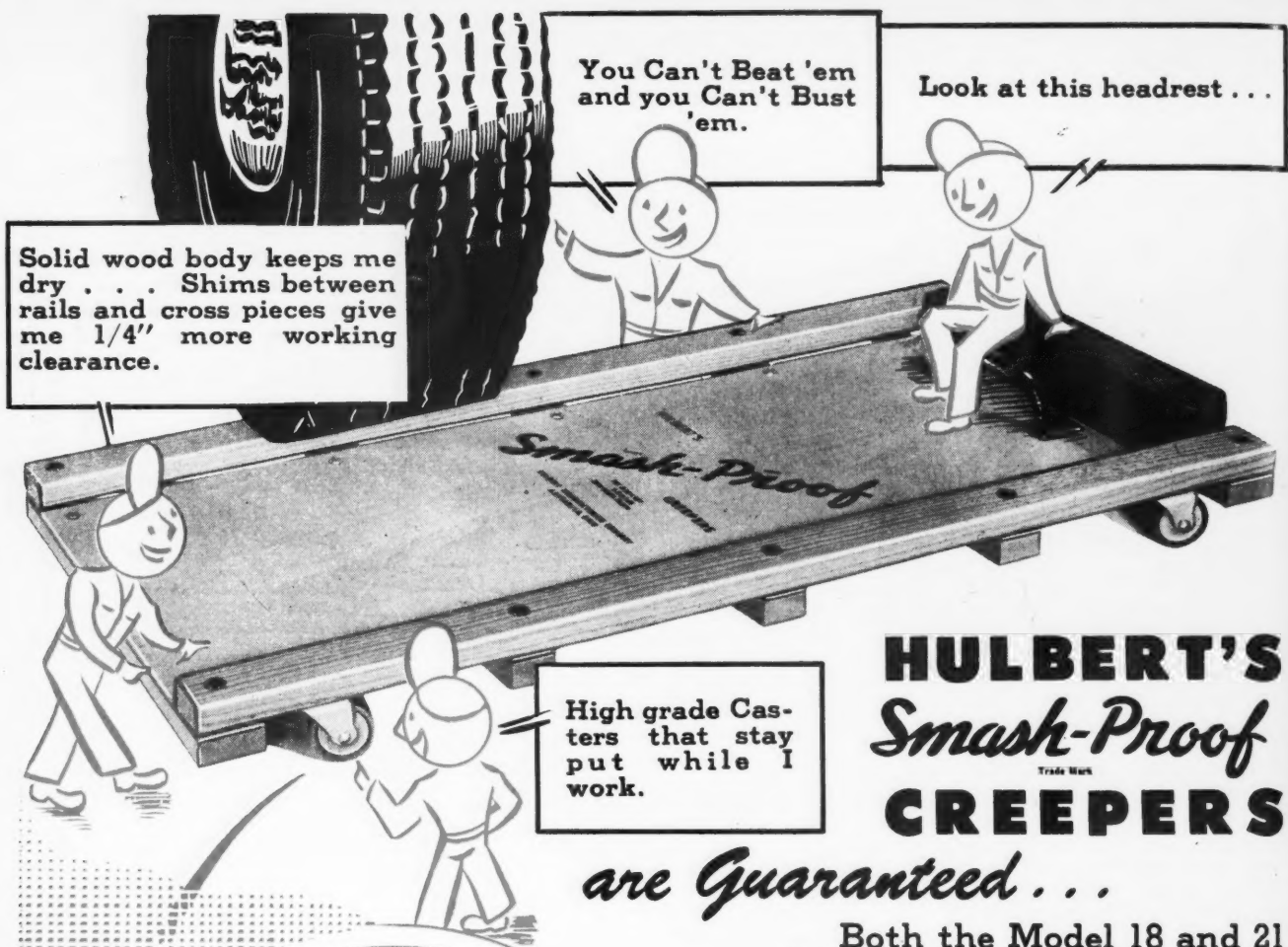


WRITE US AND A REPRESENTATIVE WILL CALL WITH A COMPLETE LINE OF SAMPLES

The HOWARD ZINK Corporation

Passaic, N. J.—FREMONT, OHIO—Long, Beach, Calif.

At your service is the most complete line of auto seat covers, cushions and fabric automotive accessories in the U.S. That's why for years dealers have known that "IT PAYS TO BE ASSOCIATED WITH THE LEADER"



HULBERT'S *Smash-Proof* Trade Mark **CREEPERS** *are Guaranteed . . .*



Both the Model 18 and 21 Smash-Proof Creepers are unconditionally guaranteed not to smash within one year from date of purchase with the exception of casters and headrest leather. Broken parts will be replaced free of charge by your jobber. More than a million and a half Smash-Proof Creepers are in use today because Smash-Proof is tough enough to live up to that guarantee. Designed right for the most comfortable working position . . . Built from body board to high grade casters to stand the gaff, Smash-Proof is first choice of experienced mechanics. Available with brake at small extra cost.

Over 4,000 leading jobbers stock Smash-Proof Creepers.

Smash-Proof
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HULBERT MANUFACTURING CO. • Ashtabula, O.



SKIL Drills

help you do more
jobs... faster!

Here's the simple profit story on SKIL Drills:

They're built to drill more holes in less time! Result?
With SKIL Drills in your shop you turn out more jobs
... take in more jobs ... and total up more profits.

It's as simple and sensible as that. So call
your Jobber today for a demonstration. Make him
prove that SKIL Drills are lighter, more compact, more
powerful. Make him prove that SKIL Drills will quickly
pay for themselves out of profits. You'll be glad you did!

SKIL ELECTRIC
Tools
PNEUMATIC
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SKILSAW, INC.

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PUBLIC DEMAND HAS CREATED A NEW AUTOMOBILE



Announcing . . .

AMERICA'S LOWEST PRICED STANDARD PASSENGER CAR

THE DEL MAR

A Quality Car For The Average Income

\$1170 (approx.) (f.o.b. San Diego, Calif.)

American engineering ingenuity has combined to produce an automobile America really needs. Completely standard, beautiful and economical. Simplicity of manufacture, engineering and mass production skill makes its price advantage possible.

The DEL MAR offers:

POWER : 4-Cylinder, 63 H.P. Continental Red Seal Engine.

SPEED : Up to 80 m.p.h.

MILEAGE : Approx. 30 miles per gal.

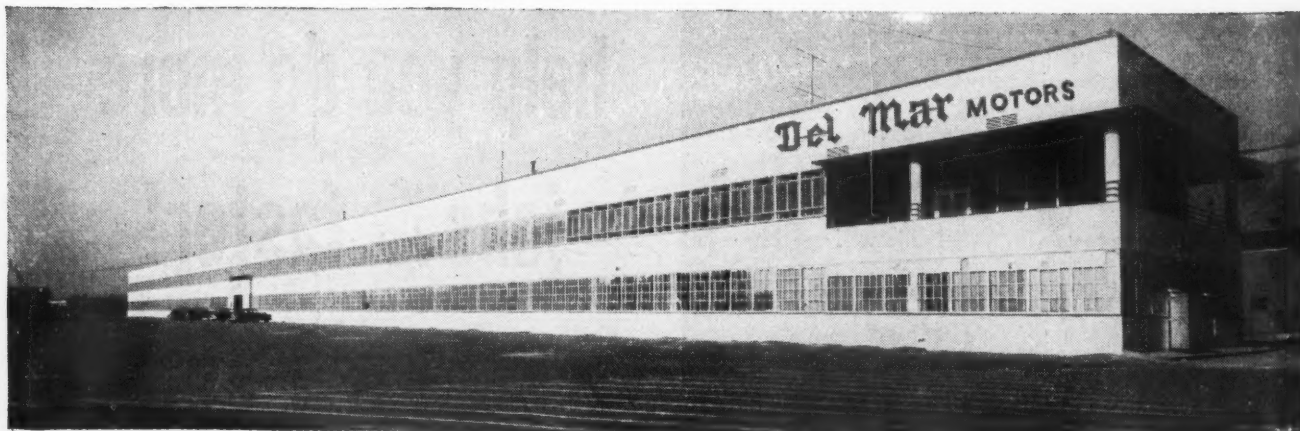
SAFETY : Strongly constructed, 100-inch wheel base; 8-inch clearance; safety glass; Bendix hydraulic brakes; seal beam headlights.

COMFORT: 60-inch front seat; Monroe shock absorbers; Firestone or U. S. Royal Air Ride tires.

BEAUTY : Modern design; body in color impregnated plastic, aluminum and steel. Interiors in harmonizing colors.

STYLES : De Luxe Convertible, Business Coupe, Two-Door Sedan.

NO DELAY in dealer and distributor display models. Full production by mid-summer. Inquiries invited.



DEL MAR MOTORS INC.

Administration Bldg. No. 4 4205 Pacific Highway San Diego, California

ENGINEAIR!

TIRE PUMP AMAZES EVERYONE

GUARANTEED 2 YEARS AND TO PUMP ONLY COOL
CLEAN AIR. WILL NOT HARM YOUR MOTOR
BECAUSE THE PUMPING CYLINDER HANDLES
ONLY COOL CLEAN AIR AND IS OILED NORMALLY

★ USED BY ARMIES OF SIX NATIONS
★ OVER A MILLION SATISFIED USERS IN U.S.A.

FACTS YOU CAN PROFIT BY

Easy to install in 1 minute. Pumps 25 to 60 lbs. higher pressure than any other such pump. (Read the tests.)

Guaranteed two years—will last many years.

Tremendous need for ENGINEAIR for trucks, tractors, autos. Millions of Americans live in isolated districts, especially farmers, and cannot depend on service stations for power air service. ENGINEAIR furnishes "on the spot" power air service ready in a minute-anywhere.

Why auto owners value ENGINEAIR. The spare is often too soft to use when needed. Slow leaks let tires down. Children sometimes deflate tires. Tires are too soft to use if vehicle has been idle a long time, ENGINEAIR often prevents disagreeable or very serious and expensive delay, especially as tires get older—less reliable—you have power air service anywhere, anytime, no matter where you live or travel. Remind them of all this and they will buy ENGINEAIR.

MANY LARGE WESTERN FARMS AND RANCHES
SERVICE UP TO 200 TIRES WITH ENGINEAIR, WHICH
ARE STILL SERVING AFTER 10 OR 12 YEARS.

ENGINEAIR needs no service—not even oiling

RESULTS OF IMPARTIAL TESTS ON 1939 AUTOMOBILE

Maximum pressure developed by ENGINEAIR	105 lbs.
Maintained full pressure through many years	
Maximum pressure developed by Pump "G"	65 lbs.
Maximum pressure developed by Pump "K"	80 lbs.
Maximum pressure developed by Pump "P"	64 lbs.
Pressures varied from 52 to 64 lbs.	
Maximum pressure developed by Pump "S"	84 lbs.
Pressure dropped to 45 lbs. during tests and never recovered	
Maximum pressure developed by Pump "S2"	78 lbs.
Maximum pressure developed by Pump "AV"	58 lbs.
Pump stalled after 40 lbs.	

Here's why patented ENGINEAIR excels and gives 25 to 60 lbs. higher pressure than any other such pump

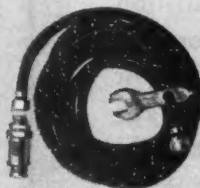
Only ENGINEAIR handles both high and low pressure tires and is fast pumping. ★ All other such pumps are limited to very low pressure tires and are slow pumping. ★ All other such pumps are too large to fit in limited space allowed on many vehicles. ★ Each different sized pumping element is a specially designed very small and efficient unit—no loose parts, no leaks—quick and convenient for service work and fast pumping. ★ Air chuck is instantly attached or detached from tire valve no matter how badly the tire

valve thread is damaged. ★ Damaged piece of hose may be cut out and connection made without tools. Unscrew and screw connecting ring off and on with fingers. ★ ENGINEAIR parts are made of steel with great mechanical precision and strength.

Place a "trial test" order for ENGINEAIR
today—money back if not fully satisfied



GUARANTEED to pump
only cool clean air



ENGINEAIR—complete ready to use, 12
foot hose, 1 pumping element,
without air gauge . . . RETAIL \$2.85



ENGINEAIR—complete ready to use with
built-in air gauge showing pressure in
tire while pumping, 16 ft. hose,
1 pumping element . . . RETAIL \$4.75

ENGINEAIR—is made and guaranteed by
G. H. MEISER & CO.
ESTABLISHED 1906 (NOT INC.)

327 E. MARQUETTE ROAD · CHICAGO 37, ILLINOIS

U. S. Patent Nos. 1,888,758; 2,191,968; 2,191,970. Patented in Great
Britain No. 527,546 and Canada in 1941.

G. H. MEISER & CO., 327 E. Marquette Rd., Chicago 37, Ill.
Send me complete information about ENGINEAIR, price lists, "no
risk" initial order plan.

NAME

ADDRESS

CITY ZONE STATE

JOBBER NAME

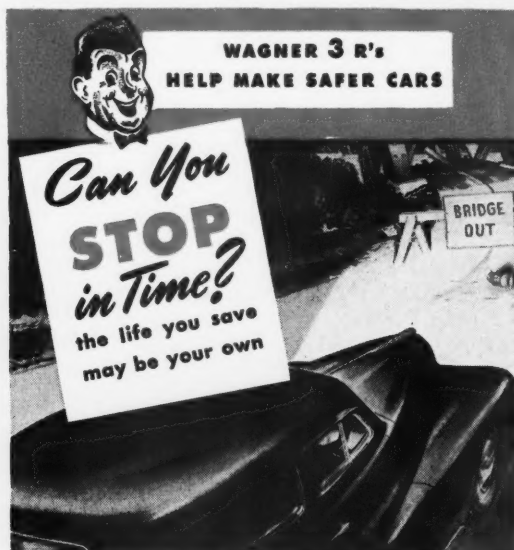
National Advertising
in POST and COLLIER'S
helps make WAGNER
the *best-known name*
for *your* brake service

Year in and year out, the name Wagner appears regularly in half page color ads in Post and Collier's. 27 million messages going *into homes* across the country . . . No wonder it's the most popular, best-known name in brake repair service. *All three* genuine Wagner products . . . WAGNER Lockheed Brake Fluid . . . WAGNER Lockheed Hydraulic Brake Parts . . . WAGNER CoMaX Brake Lining . . . are familiar names to car and truck owners everywhere for quality leadership and fine performance.

This year *you* can benefit directly from Wagner's famous "3-R's" campaign by featuring *all three* — and tying in with Wagner point-of-sale merchandising aids, available through your local wholesaler.

Wagner Electric Corporation
6498 PLYMOUTH AVENUE, ST. LOUIS 14, MO.

Ask your Wholesaler or write us for your
Brake Service Wall Poster, Form AU354.



For Safety's Sake... Ask
your automotive serviceman to check your auto-
mobile brakes and brake system. Act now, and
you may avoid trouble later. When needed . . .

REFILL with WAGNER LOCKHEED HYDRAULIC BRAKE FLUID

Bring the fluid in the master cylinder up to proper level with this all-season fluid. It functions under all driving temperatures. Used by car, truck, and bus manufacturers.



REPAIR with WAGNER LOCKHEED HYDRAULIC BRAKE PARTS

Restore new car performance with these quality replacements. Perfect fit, dependable performance assure you greater safety.



RELINE with WAGNER CoMaX BRAKE LINING

Unsurpassed for quick, safe, smooth stops. Relax with CoMaX!



There's a Wagner authorized service shop near you. If you don't know where...write us. Wagner Electric Corporation, 6400 Plymouth Avenue, St. Louis 14, Mo., U. S. A. (In Canada: Wagner Brake Company Limited, Toronto).



EST. 1931

Wagner

LOCKHEED HYDRAULIC BRAKE FLUID AND PARTS... CoMaX... CoMaX BRAKE LINING...
AIR BRAKES... THERMOSTATS... ELECTRIC MOTORS... TRANSMISSIONS... AUTOMOBILE BRAKES

You can depend on
Wagner Quality because:
WAGNER PRODUCTS ARE USED
AS ORIGINAL EQUIPMENT BY
AUTOMOBILE MANUFACTURERS

HA9-10

there are 2 GOOD REASONS why

you **DON'T** get

a gasket

with every

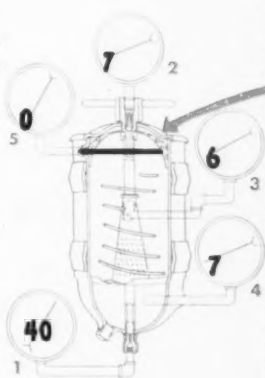
DeLuxe Cartridge you buy!



First GOOD REASON is:

Low Pressure
makes frequent
gasket replacement unnecessary!

The DeLuxe Controlled Flow LOW PRESSURE Oil Cleansing reduces service demands on the top gasket. Unlike conventional oil filters which are designed for high pressures, the outlet rate in a DeLuxe Filter is at zero lbs.! That means there is practically no pressure against a DeLuxe Gasket. That makes it unnecessary to tighten the life out of the gasket when putting on the cover. Ordinary hand pressure tightening is sufficient on a DeLuxe.



- 1 Inlet Pressure 40 lbs.
- 2 Control Valve Pressure 7 lbs.
- 3 Flow Pressure 6 lbs.
- 4 Sump Pressure 7 lbs.
- 5 Outlet Pressure 0 lbs.

CONTROLLED FLOW . . .
The secret of Low Pressure
Oil Cleansing!

Second GOOD REASON is:

DeLuxe employs a permanent-type gasket!

The combination of a *superior-built*, long-life gasket operating under *less severe service* requirements is reason number two why DeLuxe Gaskets usually last for years. The DeLuxe Gasket is *superior-built* because it is made of a specially-developed extra-thick non-laminated synthetic!

cannot SPLIT!
cannot CRACK!
cannot STICK!
readily expands with heat — contracts with cold!

Cartridge-changing is a
matter of minutes with
your DeLuxe Filter!

You don't have to scrape old gasket remains off the cover, you need not go to the trouble of "setting" a new gasket and you do the entire job without tools of any kind! Thus, DeLuxe saves you valuable installation time *every time* you change cartridges! Be sure to buy and use only genuine long-life DeLuxe Gaskets.

INSIST ON

DELUXE *Oil* **FILTERS**

FOR PRIZE-WINNING PERFORMANCE

Technically-trained DeLuxe fieldmen can tell you more than just the price of a cartridge! Their thorough knowledge of oil filtration and of the scientific DeLuxe Clean Engine Program is at your service.

DELUXE PRODUCTS CORP. 1404 LAKE ST., LA PORTE, IND.

1-3232

To keep **GLASS**
REPLACEMENT CUSTOMERS
satisfied...



give them these 10 services

Customers probably just say, "Put in new glass". But to do a quality glass replacement job requires more than that. Whether you do the work yourself or send it out, it pays to give customers all ten of the services listed at the right. They assure a good installation with trouble-free operation of windows—and that means good will for you.

The use of L·O·F Hi-Test Safety Plate Glass is an important step in doing a quality job. This quality glass is made with two panes of L·O·F Plate Glass, ground and polished for maximum freedom from distortion, and laminated with a clear, tough plastic.

Be sure the stenciled identification "L·O·F Hi-Test Safety Plate" is clearly visible after glass replacement. It tells your customers that they have better glass for safer seeing. Libbey-Owens-Ford Glass Company, 6049 Nicholas Bldg., Toledo 3, Ohio.



LIBBEY·OWENS·FORD
a Great Name in **GLASS**

**Cutting the new glass to fit. "Don't try to hurry" says the instruction book. Even the most skilled glass man knows that it takes time to do a good job. Here a pattern is carefully followed to assure easy fitting without forcing.*

THESE 10 SERVICES

assure a good glass replacement job

1. In taking out old glass, care is taken not to mar or damage any fittings, upholstery, paint or mechanical parts.
2. If the cause of the breakage is unknown, workmen try to find it.
3. If rust or some other obstruction in the frame or channel has strained the glass, the cause of the strain is removed.
4. Libbey-Owens-Ford Hi-Test Safety Glass is installed.
- *5. In cutting the new glass to fit exactly, care is taken not to chip the edges.
6. Edges that rest in the frame are "seamed" to reduce the chances of cracking from strain.
7. Edges that are exposed are rounded off smoothly to avoid cutting the channel strips or hands.
8. Weather stripping or channel tape that has gone bad is replaced.
9. All the door and window lift mechanisms are checked to make sure that they work easily, don't rattle and won't strain the glass.
10. The new glass is installed in the car just as it was at the factory, water-tight all around.

MOTORISTS WISE SIMONIZ

T M. REG. U.S. PAT. OFF.

GIVES CARS LASTING BEAUTY

*THANKS FOR
INSISTING THAT I
SIMONIZ MY CAR!*

Hane Brothers Gas Company
14120 Ventura Blvd.
Sherman Oaks, California

By offering a complete SIMONIZ service you, too, can greatly increase your profits! Send now for the FREE operation and promotion manual.

Profit Shine for '49!

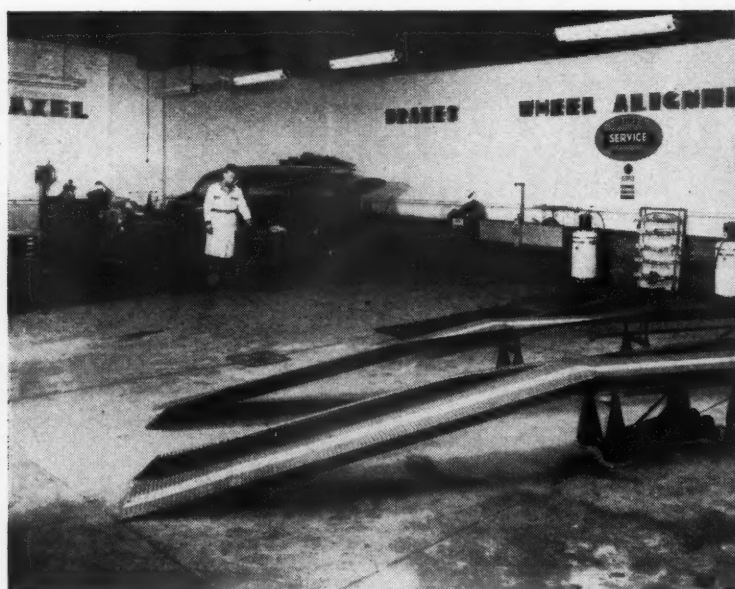
SIMONIZ sales are on the up-swing. The demand is greater than ever . . .

and so are your profit possibilities! Millions of motorists insist on genuine SIMONIZ and Simoniz Kleener—because they know there's nothing else as marvelous for their cars. This overwhelming preference—plus an increased national advertising campaign—assure you of bigger profits—insures you against customer dissatisfaction!

THE SIMONIZ COMPANY, CHICAGO 16, ILLINOIS



Front End Specialist Decorates Own Shop



FOR ten years Herman Duchin, an independent repair shop operator in West Philadelphia, kept a few pages on shop improvement which he took from February and May, 1937, issues of *MOTOR AGE*. At that time Herman didn't own his own shop, but he hoped that some day he would and could then use these

ideas. At last he has his shop and, as can be seen from the above illustration, he made good use of Frank Tighe's article which he saved. At the right above are the pages which he carried in his wallet all these years. One article described plans for improving the shop interior by dressing up the walls

with department-identifying letters. Notice the misspelling of one word on the far wall. He did that purposely to provoke the criticism of observant customers, and he says that one customer in nine corrects it for him. Although plywood was specified for these letters, Herman managed to do a good job with scrap wood.

Hot Rods

Continued from page 120

recent addition which has already proven very successful, and accordingly is becoming quite popular. The Wayne head carries vertical in-line overhead valves, and features individual porting with six intake ports on the left side and six individual exhaust ports moved over to the right or pushrod side.

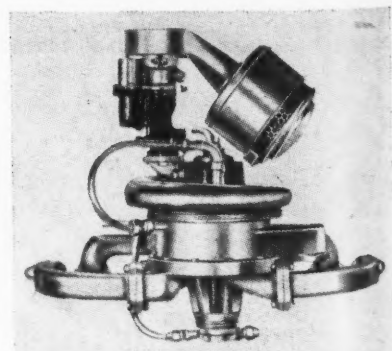
There are various engine combinations with the Chevrolet, with increases in displacement possible up to 18 per cent over the passenger car size. A complete Wayne conversion includes compression ratios up to 15 to 1, intake manifolds for two or three carburetors, and a dual exhaust system. There is no provision for heating of the intake manifold. Complete Chevrolet engines modified by Wayne have circular grooves turned in the

main journals of the crankshaft which is drilled for pressure lubrication to the crankpins.

The crankpins are reground to permit use of GM truck connecting rods and bearing inserts. This also gives a larger diameter piston pin which is retained in the special aluminum alloy pistons by the usual aluminum button method favored by racing engine builders. Camshafts are, of course, reground and valve springs are heavier. Tubular pushrods are supplied, and the GM truck aluminum alloy timing gear is used. A special two-coil ignition system also is provided.

No dynamometer data is yet available on the Wayne-Chevrolet engine, but a 255 cu in. engine recently clocked 134 mph in a roadster, and a speed of over 7000 rpm has been attained in second gear by a similar engine installed in a stock coupe.

The Besasie turbo-supercharger is a very interesting piece of equipment which has been successfully applied to Chevrolet engines, and, of course, solves the drive problem which has thus far been the chief obstacle to supercharger adaptations to stock cars. Data furnished

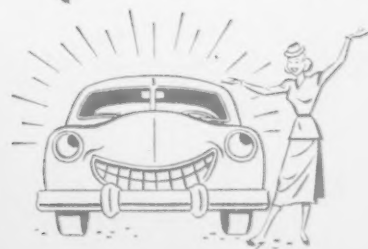


show an increase in bhp of 34 per cent and a peak torque increase of 21 per cent both at approximately 500 more rpm's than stock.

How to give Wrinkled Fenders That New Car Complexion!



... So there she was . . . first time hubby let her have the car . . . and she had a fender looking like an ad for a new permanent wave. Could we fix it . . . but fast? I said sure, because that's just what our Milwaukee Quality Tools are built to do.



Photos Courtesy Edwards Motor Co., Milwaukee, Wis.



First, we put our Milwaukee FENDER HAMMER to work — ironed out those wrinkles faster, smoother than a pants-presser at the Waldorf on a Saturday nite.



Next we got our big powerful Milwaukee DISC SANDER on the job, smoothing out all the little kinks and bumps—getting the damaged surface O.K. for final sanding.



Finish sanding and perfect feather-edges were done with the new Milwaukee PNEUMATIC SAND-ALL... the sander that puts a real satin-finish on metal, makes it easier to paint.



Finally, after painting, we gave it a fast going-over with our Milwaukee ELECTRIC POLISHER and the new Milwaukee MOTO-POLISH—Result: a really new car look!

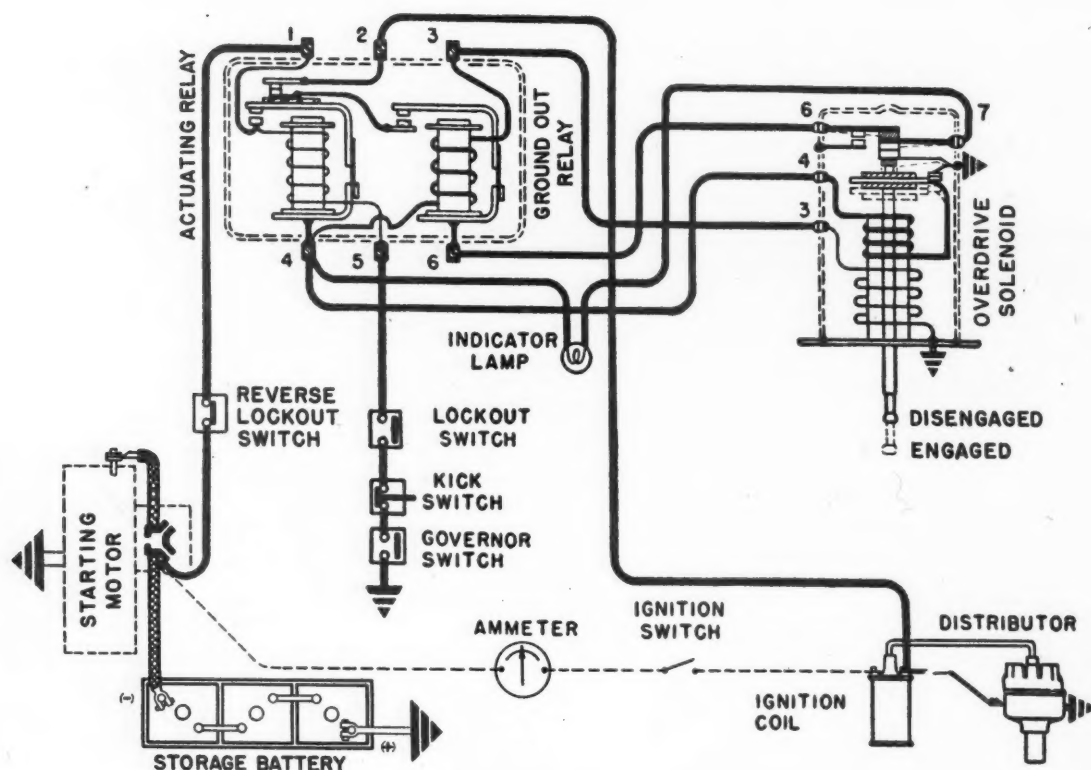


Was that lady happy? What do you think that red stuff on my cheek is? I'll tell you right now, brother, it ain't raspberry jam!

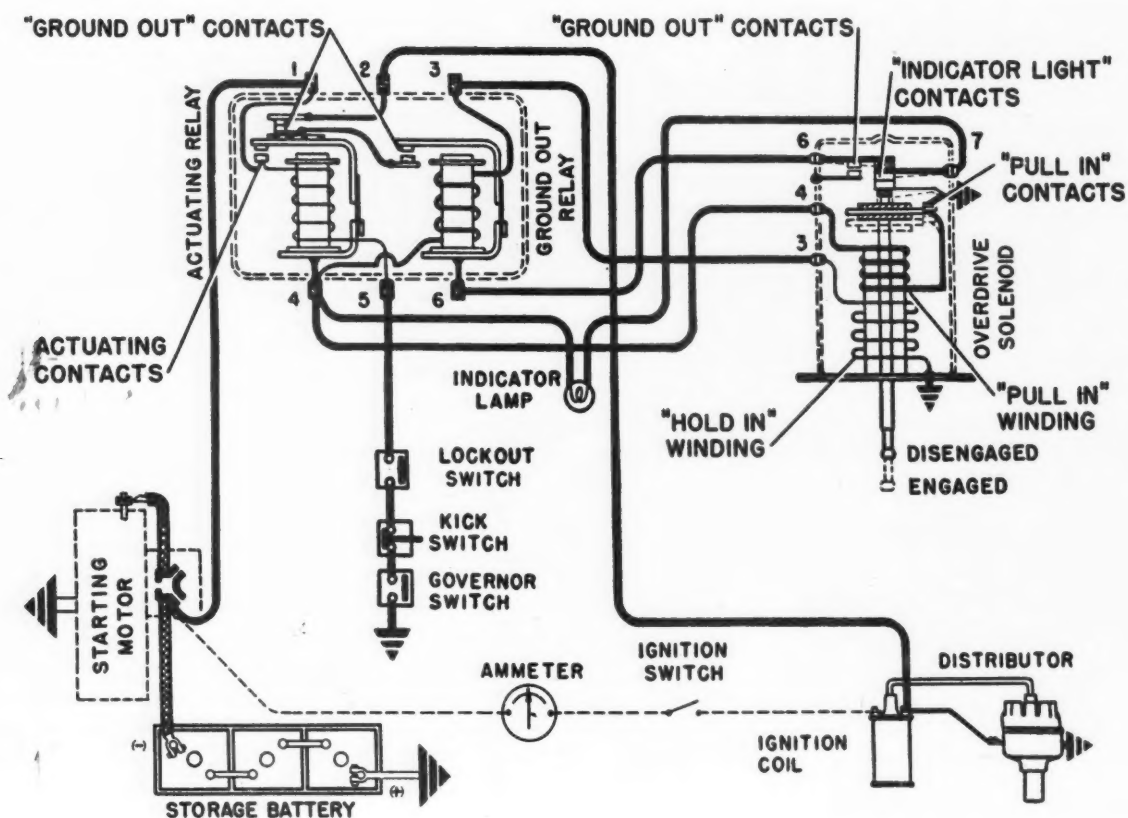
Yes, sir, Mr. Repairman, if you're looking for the fastest-working, light-weight, rugged tools for all kinds of fender and body work—you'll be time and money ahead to find out about Milwaukee Quality Tools. See how from start to finish they're designed to do bonus jobs every time. A post card will bring you complete information—or a phone call to your nearest jobber will get you a full demonstration. MILWAUKEE ELECTRIC TOOL CORP., 5330 W. State Street, Milwaukee 8, Wis.



Wiring Diagrams of Packard Overdrive



Overdrive Schematic Wiring Diagram—22nd Series



Overdrive Schematic Wiring Diagram—Prior to 22nd Series

How to make salesmen out of your customers

EVERY satisfied customer is a potential salesman for your service—and the easiest way to get them telling other folks about it is to point out the quality of the replacement parts you use. Show 'em the trade-mark "Timken"® on the tapered roller bearings you install.

Your customers know that the name "Timken" means the best in bearing performance—so if you want to make salesmen out of your customers—



... Just tell 'em it's "TIMKEN"®



Timken tapered roller bearings take any combination of radial and thrust loads, stand up under the toughest service. Timken bearings normally outlast the vehicle in which they are used! They hold parts in rigid alignment—reduce friction to a minimum.

The high quality of Timken bearings is insured by rigid controls from the melting of the steel to final assembly. No other bearing manufacturer stresses uniform precision as strongly as Timken.

To protect your reputation for top quality service, make sure the trade-mark "Timken" is on every tapered roller bearing you install. The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS

NOT JUST A BALL ○ NOT JUST A ROLLER □ THE TIMKEN TAPERED ROLLER □ BEARING TAKES RADIAL ○ AND THRUST —○— LOADS OR ANY COMBINATION

NOW AVAILABLE IN U.S.A.

THIS PRECISION-BUILT ENGLISH TOOL

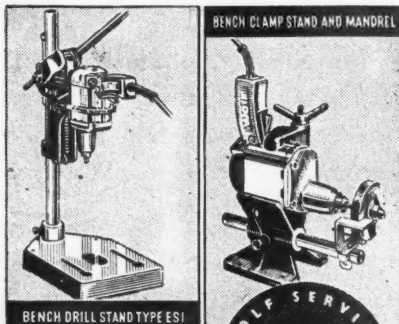
Noted for Fine Craftsmanship

**HALF A CENTURY IN 50 WORLD
MARKETS WINNING RECOGNITION
FOR HIGH QUALITY**



**THIS 1/4" LIGHTWEIGHT ALL-BALL BEARING
PRODUCTION DRILL IS AMAZINGLY VERSATILE
AND DURABLE!**

This is a popular drill with automotive manufacturers, body workers, and repair men. The low weight, short overall length and offset spindle makes this machine particularly suitable for drilling in confined spaces and prevents fatigue in the operator. The ratio of speed to power gives additional scope to the Service Garage proprietor in the operation of decarbonizing brushes and valve guide cleaners on engine reconditioning work.



**OTHER WOLF
PRODUCTION
TOOLS COMING
SOON**

GH6	6-inch Hand Electric Grinder	NW6C	3-inch Electric Drill
VSM	7-inch Portable Electric Sander	NWSI	Electric Screw-driver
CM4	Electric Chisel Mortiser	NWB	Portable Electric Blower
EVG3	Electric Valve Seat Grinder	HD2	Electric Hammer Kits

FINE ENGLISH TOOLS Every one of them performance proved. Prices, deliveries and distributor particulars on request.

**S. WOLF & COMPANY LIMITED
LONDON**

Warehouse Stocks and Service Depot—New York City. Address inquiries to U.S. Factory Representative, Fred L. Stuart, Room 1111, 33 W. 42nd Street, New York 18, N.Y. LA 4-2255.

Short Wheelbase Plymouth \$90 Under Standard Model

Analysis of the prices released by Chrysler Corporation on the new Plymouth 111 in. wheelbase car and others in the regular line fail to indicate accurately the price differential between the two lines. The reason is that the only price quoted for the short wheelbase model is for a three-passenger coupe which is not included in the standard Plymouth line. The price of \$1,295 has been estimated, however, at about \$90 to \$100 less than for a similar model in the standard line. It had been thought that Chrysler would make a definite attempt with the short wheelbase model to have a larger price differential and also to get below Ford and Chevrolet. However, the 111 in. wheelbase three-passenger Plymouth coupe compares with \$1,158 for the Ford six and \$1,260 for the Chevrolet of the same model. The general belief in Detroit, however, is that Plymouth will make a cut in the price of the short wheelbase car before too long to bring it more in line competitively. The three-passenger coupe traditionally has been the lowest price car in the line of all companies and is generally a "price leader."

RED RUBBER SQUEEGES

Made of Pre-War Rubber
2" by 3" by 1/4" thick
100 pieces \$4.95 500 pieces \$23.50 1000 pieces \$44.50

Shipped prepaid
Sample on request

PENNSYLVANIA LACQUER CENTER
145-147 N. Fourth St., Philadelphia 6, Pa.

ALLOY PISTONS



**If they're
HARD TO GET
We've Got 'em!**

To Fit Every Car in America

Write for Catalog
TSUNGANI PISTON CO.

625 East 11th St., Tacoma, Wash.



COATS IRON TIREMAN MOUNTS-DISMOUNTS TIRES 3 TIMES AS FAST

You can almost TRIPLE your tire repair PROFITS with the Coats Iron Tireman. It ROLLS tires on or off the rims in 30 seconds . . . as fast as an operator can WALK AROUND THE TOOL. New "Two-Way" bead Breaker removes both top and bottom beads without taking tire off the stand. No scraping or scuffing with the patented Coats ROLLER Action. It's easier, faster, safer . . . a BIG money maker for you.

PLUS THESE BIG ADVANTAGES

- Priced way below less efficient machines.
- The ONLY tire tool that handles ALL sizes of passenger car tires.
- Customers like it. Keeps tires out of grease and dirt.
- Protects tire, tube and rim. No pinching, bruising or denting.
- Big, tough, rugged! Practically foolproof and wearproof.

See how Coats Iron Tireman can boost YOUR repair profits. Tear out and WRITE for free literature and prices to Jack Hennessy Sales Co.



**COATS IRON TIREMAN
\$99.50**

**"Two-Way" Bead Breaker
\$15.50**

**Coats
IRON TIREMAN**

FORT DODGE, IOWA
Nationally Distributed by

JACK P. HENNESSY SALES CO.
Dept. 30, P. O. Box 22, Audubon Station
New York 32, N. Y.



That
"Extra Something"
that only
Champions have . . .

WAUSAU OIL-SAVR PISTON RINGS ARE *Bonded* TO PERFORM!

The most liberal performance warranty in piston ring history bonded by

EMPLOYERS MUTUALS

One of the World's Largest Insurance Companies

For years, Wausau Oil-Savr has been leading the piston ring performance parade — producing the results others have sought to copy — doing the things others claim. Now, Wausau Oil-Savr Custom-Made sets carry an amazing guarantee — they are BONDED by one of the largest liability insurance companies in the world. Here, for the first time in piston ring history, is an absolute unqualified assurance to you of the very finest piston ring performance under all conditions in every installation . . . Wausau Bonded Performance! Ask your jobber today, or write WAUSAU MOTOR PARTS CO., Wausau, Wisconsin

Only Wausau Oil-Savrs have
SAFETY CENTER UNIT DESIGN*

1. CLEAN—Won't carbonize
2. SAFE—Won't break
3. LIVELY—Free running
4. LASTING—Extra mileage



*U. S. Patent No. 2323815



NEW! THE "PRECISIONURL"



A radically new and improved method of piston re-sizing so simple, yet accurate, that any mechanic can do a perfect job easily and quickly.

Wausau Oil-savr

PISTON RINGS

THE FREE RUNNING RINGS . . . WITH THE SAFETY CENTER UNITS

A COMPLETE BRAKE SERVICE from 1 RELIABLE SOURCE

The "Quality" Line

SUPCO

TRADE MARK

REGISTERED

HYDRAULIC BRAKE FLUID

BRAKE PARTS

BRAKE CABLES

MASTER CYLINDERS

Supco Sam says:

ALL SUPCO KITS NOW PUT UP IN THIS ATTRACTIVE MODERN BOX WITH APPLICATION AND CONTENTS ON EACH BOX FOR EASY IDENTIFICATION

Write today for complete new catalogs
SUPCO PRODUCTS CORP.
Amityville, L. I., N. Y.

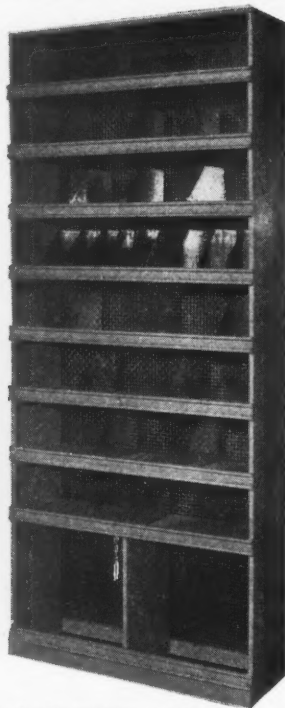
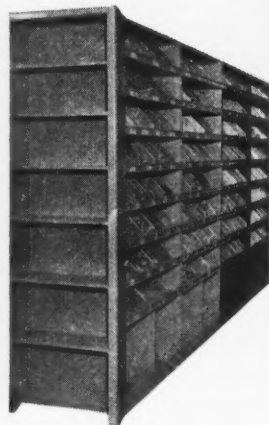
• BRAKE PARTS • BRAKE FLUID • BRAKE CABLES • BRAKE TOOLS •

SITKA-BILT BINS

Designed for maximum flexibility and efficiency. Economical, practical, sturdy, strong. Long-life, rigid wood construction. Metal dividers placed at random. Half-inch wire mesh back—better lighting—easy cleaning. Shipped set-up.

Colors—Olive Green or Light Grey.

Model SS-11 \$32.80 F.O.B. K.C.
36" Wide — 12" Deep — 84" High.



Sitka SPRUCE LUMBER AND MANUFACTURING COMPANY
Fixture Division, Box 295
2500 Genesee, Kansas City, Mo.

Business Census Covers

Automotive Trade

The Bureau of the Census this year will enumerate motor vehicle dealers and related businesses among the approximately three million business establishments of the country.

The 4500 enumerators will call on all wholesale, retail and service establishments in the country for statistical information on their operations during 1948. The information they collect, in general, will conform to the last previous business census which was conducted in 1940 covering operations in 1939, but it also will measure the changes which have occurred in almost ten years.

In addition to measuring motor vehicles distribution in terms of number of establishments, dollar sales, number of passenger cars and trucks sold (new and used), employment, salaries and wages, and so forth, this census also will assemble information on the use of motor vehicles by retailers, wholesalers and certain classes of service establishments. Moreover, the extent of expansion between 1939 and 1948 in the automotive service and repair trades will be determined.

General Motors Report

Shows Substantial Increase

A record peacetime physical volume of production was achieved by General Motors in 1948. C. E. Wilson, president, and Alfred P. Sloan, Jr., chairman of the board, stated in their annual report to almost 434,000 stockholders. Net sales were \$4,701,770,340 and net income was \$440,447,724, equivalent, after deducting dividends on the preferred stocks, to \$9.72 per share of common stock. Both sales and net income were at an all-time high in terms of dollars.

Total taxes paid by GM in 1948 were \$463,500,000, equivalent to about 10 cents for each dollar of sales. Pay rolls amounted to \$1,283,865,090 in 1948.

For 1947, net sales totaled \$3,815,159,163. Net income was \$287,991,373.

B
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B
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D
S

Save Time
Do a Better Job!



WITH LYNN Lightning SOLDERLESS TERMINAL SERVICE KIT



The Ideal Kit
for

Automotive Mechanics
Electrical Repairmen
Maintenance Men
Garage Owners
Fleet Operators
Service Shops

READY TO
USE!
NO SOLDER
NECESSARY

The modern way to apply terminals to wire for trouble-free connections. Here's what you get in one handy and compact unit, all complete in a clear plastic box with snug fitting cover:

CRIMPING TOOL—cuts and strips the wire, and crimps terminal for a quick, sure, easy connection. Worth.....\$2.95

CLEAR PLASTIC CASE—with cover. Size 8 3/4" x 6" x 1 1/4". Fitted with 11 compartments. Worth.....\$2.50

SOLDERLESS TERMINALS—Over 300 Lynn Lightning Solderless Terminals and Insulation Tubing. Worth.....\$5.00

A \$10.45 value and you pay only \$7.95. Plastic case Free! See your jobber or write us direct mentioning your Jobber's name.



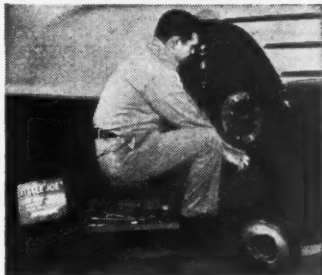
LYNN PRODUCTS CO.

317 E. Ontario St., Chicago 11, Ill.

In Canada—1206 Notre Dame St. W., Montreal, Que.
Exp. Div.—J. H. Graham Co., Inc., New York 8, N.Y.

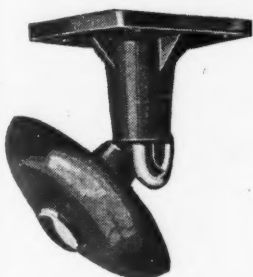
"LITTLE JOE"

The mechanic sits relaxed 12 inches from floor with everything he needs near at hand in the convenient 14"x18" heavy steel tray.



FB 258

The Gi-Gr-Nite Roller can be adapted to thousands of applications where a free-rolling, easy pivoting caster is required, such as Lubricating Equipment, Tool Chest and Tire Racks.

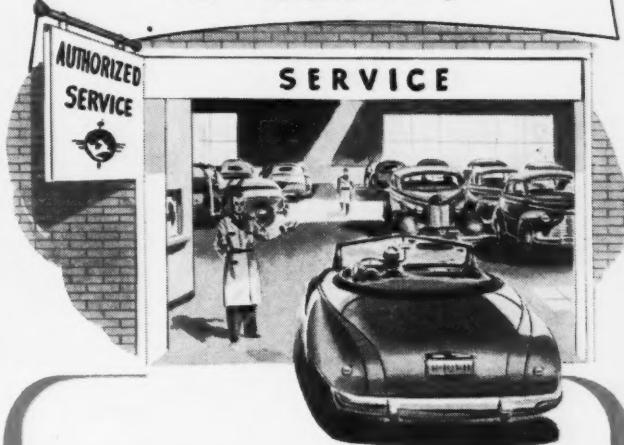


Originators of the famous, free rolling, easy pivoting Geiger-Knight auto creeper

CLINTON PRODUCTS CO.

Clinton, Michigan

D-X WITH EXTRINOL IS HERE!



The "EXTRA" in D-X Motor Oil Can Bring You Extra Profits

Extrinol is the name of the "extras" that are added to D-X Motor Oil during the refining process. Extrinol helps D-X clean motors...it protects bearings...it fights sludge...it makes D-X stand up longer and lubricate better.

D-X with Extrinol gives you a real premium sales story to tell your customers, supported by a positive money-back guarantee of satisfaction. What's more, behind D-X Motor Oil are effective sales helps including extensive magazine, newspaper, radio and direct mail advertising.

If you are located in the Central United States, you will find that a D-X dealership will be most profitable and attractive. Write today for complete details.



MID-CONTINENT PETROLEUM CORPORATION
Waterloo, Ia. Chicago, Ill. TULSA, OKLA. Omaha, Nebr. Terre Haute, Ind.

RING GROOVE CLEANER

GEAR PULLERS

Cal-Van
MACHINE PRODUCTS INC.

WRITE FOR GENERAL CATALOG

809 WATER ST.,
JACKSON MICH., U.S.A.

GARAGE TOOLS



When in DETROIT

Stop at Hotel Wolverine. Centrally located on Elizabeth Street, a block east of Woodward, overlooking Grand Circus Park. Five hundred rooms, each with tub and shower. Good food. Ample parking space—garage service. Home of THE TROPICS, most unusual night spot in Detroit.

HOTEL WOLVERINE
"The Goodwill Hotel"

RATES FROM
\$2.75 SINGLE • \$5 DOUBLE



CAMPBELL
Lug-Reinforced
TIRE CHAINS
THE CHAIN WITH THE SAW-TOOTH GRIP

U.S. Pat. No. 2,093,547 — Canadian Pat. No. 223,568

INTERNATIONAL CHAIN & MFG. COMPANY
YORK, PENNSYLVANIA



LESS WORK... with ZECOL
MORE PROFIT! CAR WASH

No wiping... No cham-
mising. No streaks or spots.
Contains no fillers or harsh
abrasives.
Packed in 6 Oz. cans, 4 Lb.
cans, 18 Lb. reusable metal
wash pails.

ZECOL, INC., Milwaukee 1, Wisconsin



Southern's Fiber Block
Soon to Be Produced

Certain features of the processes employed by the Southern Friction Materials Co. are said to be original, and covered by patent application. The fibrous material is first preformed into 12" x 18" sheets 1/2" thick. These are subsequently set under 1 1/2 tons per sq. in. at 350°F. in a hydraulic press on a ten-minute cycle. These sheets are then given a rough grinding on both sides on a three-drum endless bed sander, are cut into strips on a stone saw, are placed in arced curing forms, and are cured to complete rigidity by four hours at 350°F. The usual buffing, drilling, and other finishing operations complete the manufacture.

Genuine SERVICE
INDIANAPOLIS
"Measurably Better"
SPRINGS

SERVICE SPRING COMPANY
INDIANAPOLIS 6, INDIANA



Lamps, reflectors,
flameless flares,
rear view mirrors,
direction signals and
safety lighting
equipment.

the GROTE MFG. CO., Inc.
BELLEVUE, KENTUCKY

*the Brightest Spot
on the Road*



WELLS
Genuine Ignition

USE
PROVED
IGNITION
PARTS

**QUALITY TELLS
Demand. WELLS**

WELLS MFG. CORPORATION
FOND DU LAC, WIS.



BANK ON BARTON
QUALITY CHEMICALS

DEALERS: Write for prices! DISTRIBUTORS
choice state distributorships open!
14 years of specialized leadership.
Barton's 30 famous chemicals give
you the biggest profit offered on any
quality chemical line.

BARTON PRODUCTS CO.
2765 ST. MARY'S CT., CHICAGO 47, ILL.

Designed Especially for
AUTO & AVIATION
SERVICE *Fields...*

- ★ Specialized and General-Purpose Cleaning Compounds for Every Requirement
- ★ Liquid Paint Mask & Paint Strippers
- ★ Degreasing Machines & Safety Solvents

Write for full details!

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DETROIT 32, MICHIGAN



SALES PROMOTION ITEMS

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If it's Good Will Builders you need... write us for quotations

HAUSMAN MFG. & SALES CO.
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The Fastest Growing Premium House in America

• GUMOUT CLEANS CARBURETORS •

GUMOUT
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carburetors

Gumout cleans fuel system, keeps it clean! Improves engine performance. Eliminates moisture. Adds power. Use the year around with your gasoline.

PENNSYLVANIA REFINING CO.
2692 Lisbon Road, Cleveland 4, Ohio
Butler, Pa.—Edgewater, N. J.

• GUMOUT CLEANS CARBURETORS •





NOW!

The **MOST** complete line of Front End Suspension Parts including Ford, Kaiser-Frazer and Studebaker.

Sold thru
Jobbers only
Write for catalog





AUTOMOTIVE MAN'G CO. INC.
General Offices and Warehouse
570 W. FULTON ST. CHICAGO 6, ILL.



There's More than Steel in

TUTHILL SPRINGS

for ALL CARS & TRUCKS



There's **EXPERIENCE** — 70 years in precision leaf spring manufacturing

There's **QUALITY** — Finest alloy obtainable, heat treated for added strength

ASK YOUR JOBBER or write direct for CATALOG

TUTHILL SPRING CO.
760 WEST POLK STREET • CHICAGO 7, ILLINOIS



announcing!
a superior new

HEAVY-DUTY CLEANER

(COLD TANK)

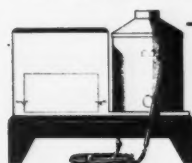
KELITE 504

FOR REMOVING PAINT, SLUDGE, LIGHT CARBON, ETC. FROM AUTOMOTIVE AND AIRCRAFT ENGINES AND PARTS

Read these exceptional features...

1. Safe on all metals including cadmium and zinc! ... 2. Used at normal room temperatures! ... 3. Will not burn up to 140° F! ... 4. Rinse with water or solvent! ... 5. Cleans effectively even when heavily contaminated! ... 6. Liquid seal gives exceptionally long life!

FOR PROOF OF SUPERIOR PERFORMANCE, MAIL COUPON TODAY



KELITE STEAM CLEANER

America's Finest. Outperforms all others due to patented features. Simple — trouble-free — easy to operate — low cost. Write for free demonstration or literature.

"KELITE" REG. U.S. PAT. OFF. • pH CHART COPYRIGHTED 1942 BY KELITE PRODUCTS, INC.




SCIENTIFIC CLEANING THROUGH pH CONTROL

MAIL THIS COUPON TO NEAREST OFFICE

KELITE: Chicago 45, Ill. — 3401 Touhy Avenue
Dallas 2, Texas — 2501 Cleveland Street
Los Angeles 54, Calif. — Box 2917 — Terminal Annex
Mineola, N. Y. — Box 328 — Old Country Road

☐ **SEND SAMPLE** ☐ **DEMONSTRATE** MA 4
Kelite 504 for Engine and Parts Cleaning

NAME _____
COMPANY _____
STREET _____
CITY _____ STATE _____

Charlotte Southern Says ...

YES SIR! IT'S INDIVIDUALLY
ARCED IN ACCURATE
CURING FORMS TO THE
EXACT DRUM DIAMETER

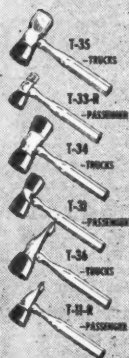


SOUTHERN FRICTION MATERIALS
COMPANY
CHARLOTTE, N. C.

Always Insist On

KEN TOOLS
...they're "Job Designed"

Ask For KEN-TOOL
Replaceable-Rubber-Head



OR
KEN-TOOL Standard

**Tire
Hammers**

"Job Designed" for changing tires
use either KEN-Standard or
Replaceable-Rubber-Head Tire
Hammers. Built stronger to last
longer... real time and labor saver!



JOBBERS: Write for Catalog Today!

LARGEST EXCLUSIVE MANUFACTURERS
OF TIRE AND WHEEL CHANGING TOOLS

The KEN-TOOL Mfg. Co.

Akron 5, Ohio

THE ANDREWS LINE ...

Your Best Electrical Connection

CUSTOMER SATISFACTION SINCE 1921

Andrews
MANUFACTURING CO
ST. LOUIS, MO.

First for Comfort

BOSTROM

**HYDRAULIC
TRUCK SEAT**

BOSTROM MFG. CO. MILWAUKEE, WIS.

Two New Companies Plan Rear Engine Automobiles

Two new entries into the automobile field have been announced in recent weeks. One is called the Mustang and plans call for building it at Renton, Wash., for sale exclusively in the Pacific Northwest. It would have a rear mounted 60 hp., 4 cyl. Hercules engine, 102 in. wheelbase, height of 61 in., and sell for approximately \$1235 plus taxes. The other car would be front drive with a flat opposed 40 hp. air-cooled engine in the rear. Pilot mode of the car weighs 1900 lbs., is 153 in. overall length, 67 in. wide, and 61 in. high. Ben F. Gregory, Kansas City designer and engineer, hopes to sell the car for about \$1050.

Since 1897

**UNITED STATES
ELECTRICAL TOOLS**

have never swerved from their
original standards of **QUALITY
AND SERVICE**

**THE UNITED STATES
ELECTRICAL TOOL CO.**
CINCINNATI, OHIO

DOR-TITE
STOPS

SQUEAKS, RATTLES, DUST
and DRAFTS IN OLD or NEW
CARS. 1000 OTHER USES.



THE ORIGINAL SPONGE-
RUBBER STRIP WITH
PATENTED NO-STRETCH
FABRIC BACK.

DURKEE-ATWOOD CO.
★ ★ Minneapolis 13, Minnesota ★ ★

COLE-HERSEE for QUALITY
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COLE-HERSEE for DEPENDABILITY

COLE-HERSEE

for America's Finest
Original Replacement Switches

Write for Complete Catalog

COLE-HERSEE CO.

20 Old Colony Ave., Boston 27, Mass.

Now! Needle Bearing Knees



We rebuild Knee Action units for
Chevrolet '34-38 and Pontiac '34-36
with Needle Bearings which restore
the soft resilient ac-
tion equal to the
thrill of new car
comfort. The com-
plete unit is given a
guarantee equal to
new. If your jobber

can't supply you, write and give us his name.

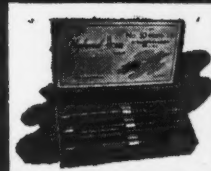
VAN BERGEN & GREENER, INC.

1619 N. Hayne Ave., Chicago 47, Ill.

356 Venable N.W. ATLANTA 2727 Oak St. KANSAS CITY 2306 N. 15th St. PHILADELPHIA

WOLF'S HEAD
IS 3 STEPS AHEAD
WOLF'S HEAD
MOTOR OIL AND LUBES
100% PURE PENNSYLVANIA
P.G.C.O.A. Permit No. 6

THE NEW Hyland HONE
Saves Time • Low Price • Guaranteed



No. 18 - \$3.90

1/2" to 1"

No. 28 - \$3.90

1" to 1 1/4"

No. 38 - \$4.15

1 1/4" to 2"

No. 50 Set Services Brake Cylinders 1/4" to 2" \$11.95
HYLAND MANUFACTURING COMPANY
314 JOHN STREET PORTSMOUTH, OHIO

You Can Rely On

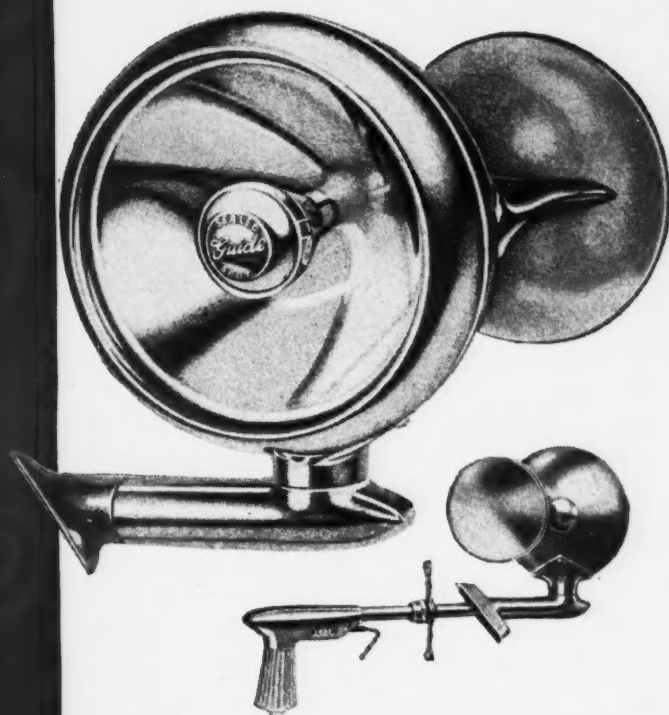
**FRENCHTOWN
INSULATORS**

Used by more spark plug
manufacturers than any other.

FRENCHTOWN PORCELAIN COMPANY

81 Muirhead Ave., Trenton, N. J.
(Factory: Frenchtown, N. J.)

HERE'S
THE ONE
THEY
WANT!



GUIDE

COMBINATION SPOTLAMP AND OUTSIDE MIRROR

There's nothing to match it on the market—for usefulness, for quality, for smart appearance.

This handsome Guide combination spotlamp with sealed light unit gives motorists the *plus value* of a crystal-clear outside mirror, *adjustable from inside*. Both the spotlamp and the mirror are controlled by smooth-working inner mechanism . . . no need to roll

down the window when making adjustment. Both are full Guide quality—and they look it!

Give this important Guide development good display. They're easy to sell, easy to install. Right and left side installations for most popular makes of cars. Order yours from your United Motors distributor.



GUIDE LAMP—A UNITED MOTORS LINE
Available Everywhere Through
UNITED MOTORS DISTRIBUTORS

Guide
LAMP
Division of General Motors
Anderson, Indiana



This Hygrade fuel pump lasts longer because it starts younger—brand new from head to foot.

Get acquainted with the non-distorting, non-corroding diaphragm. No mileage guarantee . . . no guarantee for years. This diaphragm lasts for the *life-of-the-pump*.

Not only the diaphragm, but every other part of this all-new Hygrade fuel pump is a long-lifer. The rocker arm is smooth working. It's heat-treated for extra

strength, and specially processed to prevent corrosion. The sealing surfaces of the castings are polished mirror-smooth where they touch the diaphragm to prevent abrasion. The valves operate like heartbeats. The springs are phosphor bronze.

This is another partner-in-service for you from Hygrade. Ask your jobber, too, about the new Hygrade fuel pump assortment with the cabinet that can count.

Buy Hygrade...better made...better for your business

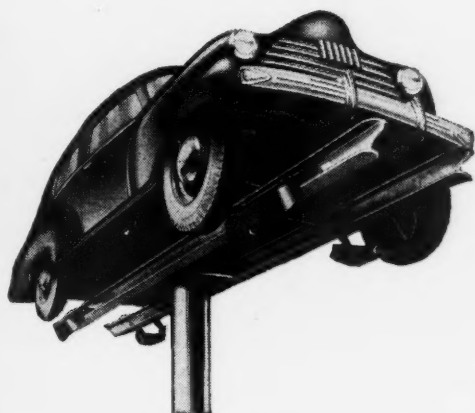
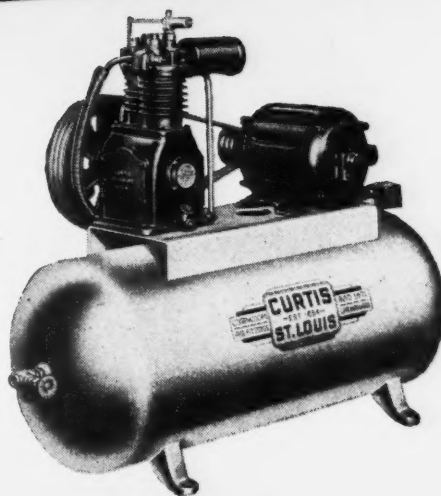
FUEL PUMPS • FUEL FILTERS • • • FUEL PUMP KITS AND PARTS • • • CARBURETOR KITS AND PARTS • SPEEDOMETER PARTS
HYGRADE PRODUCTS DIVISION • STANDARD MOTOR PRODUCTS, INC. • 35-35 35th ST., LONG ISLAND CITY 1, N. Y.

CURTIS

The BIG NAME in Automotive Service Equipment gives you
RUGGED DEPENDABILITY • LONG LIFE • MAXIMUM EFFICIENCY
 because 95 years of successful engineering, designing and precision
 manufacturing assures the "know-how" to produce the best in equipment.

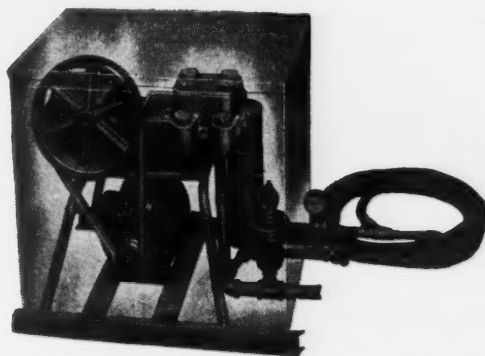
CURTIS AIR COMPRESSORS

- Timken Bearing Equipped
- Self-oiling — Controlled Lubrication
- Positive Unloaded Start
- Automatic Electric Welded Tank



CURTIS AUTO LIFTS

- Full Hydraulic — Oil Locked
- Safe at any Level
- Self-leveling Platform
- Complete Accessibility



CURTIS HYDRAULIC CAR WASHERS

- 1 to 3 H. P.
- Duplex—Double Acting
- Self-oiling Pump
- Brass-lined Cylinders

Check coupon for items in which you are interested and mail today.

CURTIS PNEUMATIC MACHINERY DIVISION

of Curtis Manufacturing Company

1946 Kienlen Ave.

St. Louis 20, Missouri

CURTIS

95 Years of Precision Manufacturing

CURTIS PNEUMATIC MACHINERY DIVISION
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☐ Auto Lifts

Name.....

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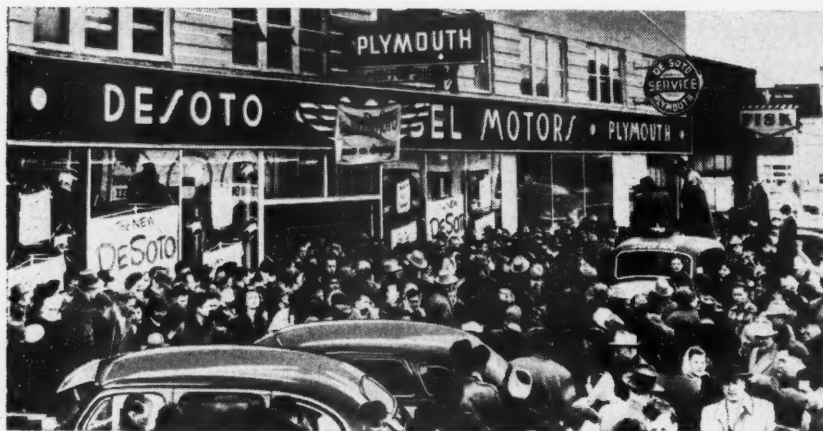
Firm.....

☐ Air Compressors

Street.....

City..... Zone..... State.....

CROWDS HAIL NEW DESOTO



On March 5, the brilliant new DeSoto was presented to the public . . . and in a single day 3,000,000 persons were estimated to have seen this great new car. They sat in it. They

examined it thoroughly. Many of them rode in it. The verdict was unanimous:

The new De Soto is by far the greatest ever built!

TUNE IN "HIT THE JACKPOT" EVERY TUESDAY NIGHT, ALL CBS STATIONS

AEP PLAN

AUTOMOTIVE EQUIPMENT

DOOR...for OPPORTUNITY

Here's where a knock is a boost . . . for you. Don't wait for opportunity to knock on *your* door. Step up and knock on the door that puts opportunity in your hands.

See what's back of AEP . . . find out how it can help you modernize and increase the capacity of your shop by installing profit-making new equipment with very little initial expenditure.

Your jobber will quote you prices on the things you need . . . explain Commercial Credit's Automotive Equipment Plan terms . . . help you take that big step forward. See him without delay.

THE BEST EQUIPPED SHOP
GETS THE PROFITABLE BUSINESS

BUY . . . AND FINANCE . . .
THROUGH YOUR JOBBER

ONE CONTRACT . . . ONE COST
... INSURANCE INCLUDED



If you don't know about AEP . . . ask your jobber.

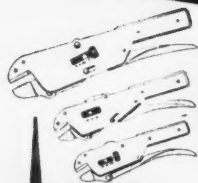
COMMERCIAL CREDIT CORPORATION

A Subsidiary of

Commercial Credit Company, Baltimore ■ Capital and Surplus \$95,000,000

MORE THAN 300 OFFICES IN PRINCIPAL CITIES OF THE UNITED STATES AND CANADA

COSTS MORE - WORTH MORE



**3
DIFFERENT
SIZES**

Right Size and Pressure
for Every Job

**ONE
HAND
OPERATION**
Opens with a Flick
of the Thumb

**JAWS
ALWAYS
PARALLEL**
For Better
Work-Holding

**HIGH
CARBON
STEEL**
Smooth Black
Finish

**CALIBRATED
SCALE**
Shows Jaw
Opening Size

**ADDED
GRIPPING
POWER**
Up to 1½ Tons
Better Leverage



Today's customers want their money's worth before they buy. You can give them a full-value plier-wrench only if you have BMC Pressure Lock Wrenches. Here's why your customers want, and why you can sell more, BMC Pressure Lock Wrenches: Only the BMC Pressure Lock Wrench has all these

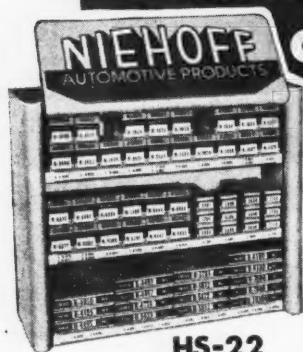
extra values . . . it's six tools in one . . . adjustable pliers, pipe wrench, locking clamp, gripping tool, monkey wrench, and hand vise. The cost is but a few cents more, No. 7 — ¾" Jaw, \$2.29; No. 9—1" Jaw, \$2.59; No. 11—1½" Jaw, \$4.89 Retail. Fair Traded. Give your customers extra value for their money with attractively packaged, fast counter selling BMC Pressure Lock Wrenches. Red plastic or steel handle grips. Free sales helps.



Write for name of nearest **BMC** Jobber.

MANUFACTURING CORPORATION, BINGHAMTON, N. Y.

NOW... A Small Investment Gives You COMPLETE CAR COVERAGE



HS-22

NIEHOFF HYDRAULIC BRAKE SERVICE STOCKS

For less money than you think, you can have a complete assortment of fast-moving Hydraulic Brake Parts to service all popular makes and models of cars and trucks. 30 master and wheel cylinder kits, 16 hoses and 21 switches—plus an attractive all-metal cabinet with stock control numbers on the edge of each shelf that tell how to arrange stock . . . where to find it . . . what and when to re-order. A time and effort saver that assures faster turnover and more profit. Ask your Jobber or write for literature

C. E. NIEHOFF & CO.

4920 Lawrence Ave., Chicago 30, Illinois
Branches: BOSTON 34, Mass., 254 Brighton Ave.; LOS ANGELES 15, Calif.,
1330 W. Olympic Blvd.; NEW YORK 19, N. Y., 230 W. 54th St.

NIEHOFF

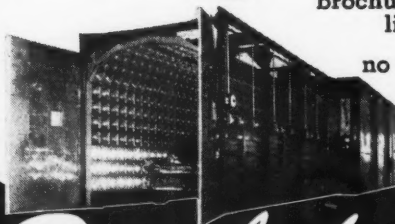
APPROVED QUALITY PRODUCTS

THE KEY TO PRODUCTION AUTOMOTIVE REFINISHING

- **ONLY QUALITY INFRA-RED** equipment permits large scale production with resultant large profits at low customer cost
- Shops set up through our consulting service in production automotive refinishing are turning out up to 30 cars a day—4 cars per hour



WRITE
for illustrated
brochure & technical
literature
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Durabake Inc
FOSTORIA, OHIO



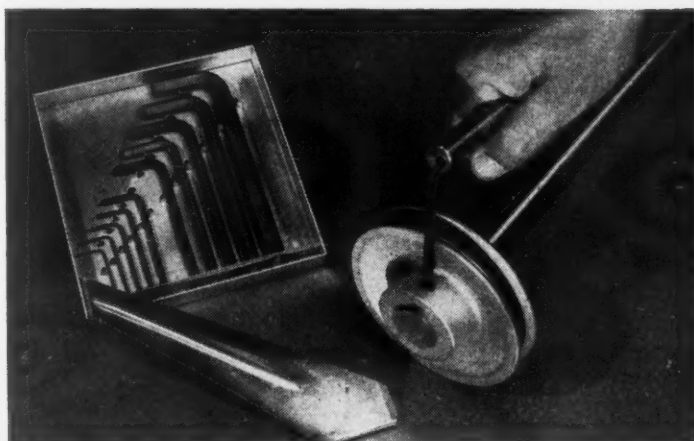
Announcing K-D # 30 Socket Screw Key Set

A necessity for every
mechanic, every day!

Eleven sizes—.050" to $\frac{3}{8}$ ".

11 hex keys packed in handy, rust-proofed metal kit with hinged retaining clamp—plus — extension handle to use on short end of key when long end must be used to turn screw (as in illus.). Short end of key fits into hole in extension end. 2 holes in end shown take keys .050" to $\frac{1}{8}$ ". Larger hole in opposite end from $\frac{1}{8}$ " to $\frac{3}{8}$ ". Quick reading bolt, cap and wrench size chart stamped in container. Keys accurately forged, correctly tempered.

K-D Mfg. Co., Lancaster, Pa., Hamilton, Ont.



K-D TOOLS—at Jobbers everywhere

Maybe "more production" isn't the answer to all our problems

AMERICAN INDUSTRY is already producing at almost double its pre-war rate. Yet with labor and material costs at an all-time high, the experts insist that we must produce still more goods, faster, more efficiently, if we are to avoid another boom-and-bust cycle.

We'll buy that—as far as it goes.

But let's never lose sight of the fact that production is only half the problem. Because for every increase in our rate of production, there must be a comparable rise in our *rate of sales*.

Actually, of course, there is no such thing as producing goods at a profit. Goods are *sold* at a profit—yes. And while production line savings are vitally important, it is of equal importance to keep down the

cost of *manufacturing sales*.

That is the function of *mechanized selling*—to produce sales on a mass production basis, and at the lowest possible cost per unit. Translated into more familiar terms, it simply means advertising to the right market, in the right way, at the right time.

Like the machine on the production line, good advertising is a multiplier of men's efforts, for it enables us to produce (and *earn*) far more than we could alone. And when it goes to work in business papers—with their tremendous concentration of hand-picked readers—advertising becomes the most efficient machine at our disposal for *manufacturing sales at a profit*.

What are the ten ways to measure the results of your business paper advertising? You'll find the answers in a recent ABP folder, which we'll be glad to send you on request. Also, if you'd like reprints of this advertisement (or the entire series) to show to others in your organization, you may have them for the asking.



MOTOR AGE

is one of the 129 members of The Associated Business Papers, whose chief purpose is to maintain the highest standards of editorial helpfulness—for the benefit of reader and advertiser alike.

Everybody's Pleased With **VISULINED STEERING...**



THE CUSTOMER

Because he gets "New Car" steering comfort and safety.



THE SERVICE MANAGER

Because he gets no complaints from Visulined Service.



THE MANAGEMENT

Because more customers and trouble-free shop conditions mean more profits.



THE MECHANIC

Because his work is easier and faster.

Only a shop equipped with the unique new John Bean VISUALINER and VISUBALANCER can turn out VISULINED STEERING . . . and earn the profits beam-of-light speed and accuracy make possible. Ask your John Bean jobber for full information.

John
BEAN

VISUBALANCER

STEERING SERVICE WITH BEAM-OF-LIGHT SPEED AND ACCURACY

VISUALINER



JOHN BEAN DIVISION

FOOD MACHINERY AND CHEMICAL CORPORATION

LANSING 4, MICHIGAN

WHEEL ALIGNERS AND CORRECTION TOOLS • WHEEL BALANCERS AND
BALANCING TOOLS • WEIGHTS • CAR WASHERS • HEADLIGHT TESTERS

MOTOR AGE

Covers the BUYING POWER in the Automotive After-Market

MOTOR AGE has a total monthly press run of 68,000. Its total paid circulation is 66,606.

It reaches 25,794 Car and Truck Dealers out of a total of 43,004.

It goes to 37,258 Independent Maintenance Establishments out of a total of 59,908.

It has 3,282 Jobber subscribers out of a total of 8,338. In other words MOTOR AGE reaches approximately two-thirds of the automotive retail establishments, and since its subscription staff is salaried and completely controlled, this circulation is highly selective, quality coverage. It represents preponderantly managers and proprietors of the larger and more important establishments — men with buying power and money to implement it.

RENEWAL PERCENTAGE 73.10%

The popularity of MOTOR AGE with its readers may well be measured by its subscription renewal rate, which is 73.10% — the highest for any directly competitive publication.

MOTOR AGE

A CHILTON Publication

Chestnut and 56th Streets ① Philadelphia 39, Penna.

THE MOST SWEEPING ADVANCEMENT SINCE AUTOMATIC GAS PUMPS

*The **ALLEN** method of "over-the-fender" oil changing completely drains and refills in less than 3 minutes!*



In the time it takes to fill a gas tank . . . in less than the time it ordinarily takes to remove the drain plug . . . the revolutionary new ALLEN KWIK-SERV Automatic Oil Changer performs the complete drain-fill operation! Any time . . . any place . . . the Allen KWIK-SERV completely removes old oil and puts in fresh oil. The operation is simple . . . the job is thorough. Pits, lifts and service areas are free for greasing and washing . . . creepers, drain cans and wrenches are obsoleted! Crankcase flushing is simple and fast, too.

EXCLUSIVE 3-WAY SELECTOR VALVE

Only ONE control for all operations . . . it's as simple as this!



1. Turn control to DRAIN...OUT comes all old oil!
2. Turn control to FILL...IN goes fresh oil!
3. Turn control to EMPTY...to pump waste oil from scavenger tank.

INCREASE YOUR PROFITS!



Extra profits in additional oil sales . . . man-hour and equipment savings . . . more flushing jobs . . . attract *new* customers, more buyers of all your services and products. The added profits will pay for an Allen KWIK-SERV in a few months.

A NEW DAY IN OIL CHANGING METHODS IS HERE! GREET IT BY SENDING FOR COMPLETE INFORMATION ON THE ALLEN KWIK-SERV.



ALLEN

ELECTRIC and EQUIPMENT COMPANY

2342 NORTH PITCHER STREET

KALAMAZOO, MICHIGAN



Motor
Testers



Synchrographs



Fast
Chargers



Welding
Equipment



Electrical
Laboratories

ALLEN ELECTRIC & EQUIPMENT CO.
2342 No. Pitcher St., Kalamazoo, Mich.

Please send us complete information on the
Allen KWIK-SERV Automatic Oil Changer.

Name _____

Address _____

City _____ State _____

Here's The **SALES HELP** You Need in the New Competitive Market



Polk Weekly New Car Sales Reports make it possible for you to:

1. Check local new car deliveries *that you didn't sell.*
2. Contact these new car owners *for the service business you must have.*
3. Locate the persons on your order list who have bought new cars of a different make. You, your sales manager, your service manager, can use these reports in scores of profitable ways. Learn the name and address of everyone taking delivery of a new car in your sales area, or any other territory. Write to:

R.L. POLK AND COMPANY, Direct Mail Advertising Division

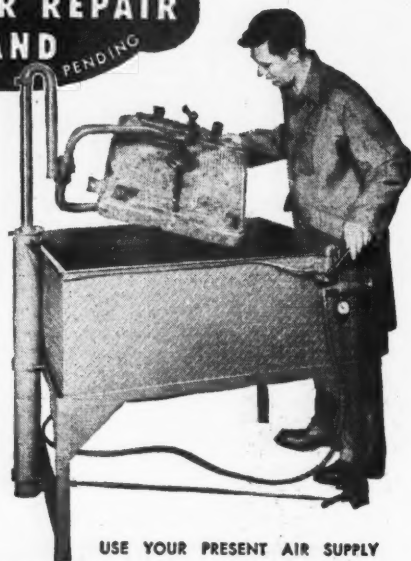
HEADQUARTERS: POLK BUILDING, 431 HOWARD ST. DETROIT 31, MICHIGAN

BRANCHES AND PRODUCTION PLANTS: New York Chicago Philadelphia Cleveland St. Louis Cincinnati Trenton

DOUBLE RADIATOR REPAIR PROFITS!

Universal
**RADIATOR REPAIR
STAND**
PATENT PENDING

- ELIMINATES HAND LIFTING
- CUTS REPAIR TIME 50%
- EASY OPERATING AIR-HYDRAULIC CONTROLS
- TILT RADIATOR 360° IN ANY DIRECTION
- TIME TESTED AND APPROVED
- LOW PRICED



USE YOUR PRESENT AIR SUPPLY

No more back-breaking radiator lifting with this efficient, air-operated hydraulic hoist. Universal arm enables you to swing radiator into any position for testing and soldering. Safe, double-locking clamp with special rubber pads, holds all standard car and truck radiators. Write today for descriptive folder.

Attractive Franchises Available

KENNEDY MACHINE COMPANY
DEPT. 11 • PLATTEVILLE, WISCONSIN

SPRINGFIELD



Top Quality



**TUNGSTEN CONTACTS
AND CONDENSERS**

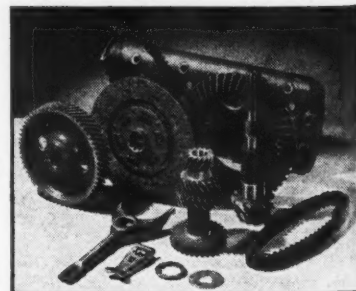
Springfield Electrical Specialties Inc., 120 Wooster St., New York 12, N. Y.



**PERFECTION
PARTS**

are
Certified to excel

PERFECTION GEAR CO.
HARVEY, ILLINOIS



MORE JOBS...MORE PROFIT

with NALCO infra red dritherm Portable Units

Cuts drying time—eliminates paint job "bottlenecks." Here's what NALCO units can do for you—in 15 minutes!

- Entire fender jobs of synthetic enamel dried, ready for polishing.
 - Putty glaze dried.
 - Color coats dried hard for polishing.
- NALCO units are available in pairs, groups or banks and for tunnels.

Write for your free copy of "Factory Methods in Your Shop."



NORTH AMERICAN
Electric Lamp Co.

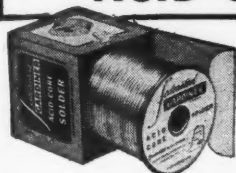
1071 TYLER ST., ST. LOUIS, MO.



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GARDINER
BRAND

ACID CORE SOLDER



A free flowing and easy-to-use ACID CORE SOLDER for automotive and general work. You don't have to add any flux... the flux is in the solder. Comes in all commercial sizes and quantities.

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METALS DIVISION

AMERICAN SMELTING AND REFINING COMPANY
WHITING, INDIANA (CHICAGO)



SCREWMASTER

As mfd. by: Associated Products and Engineering Company, Inc.
Springfield, Massachusetts

New, Revolutionary Time Saver

Belongs in every tool chest... Saves time and effort. Easily removes bound, rusted or mutilated threaded fastenings. Removes or sets screws with or without heads... Powerful cam action magnifies lateral shocking force... Begins where conventional screw drivers fail... Made of special hard-ened steel



Model	Screw Head Diameters
#1	3/32"-5/32"
#3	5/32"-1/4"
#5	5/16"-7/16"
#7	7/16"-5/8"

Special Priced Large Model Also Available

At your Dealers or send check or money order to **\$4.95** Per Model Postpaid

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NOW! 145 State St. Springfield, Mass.

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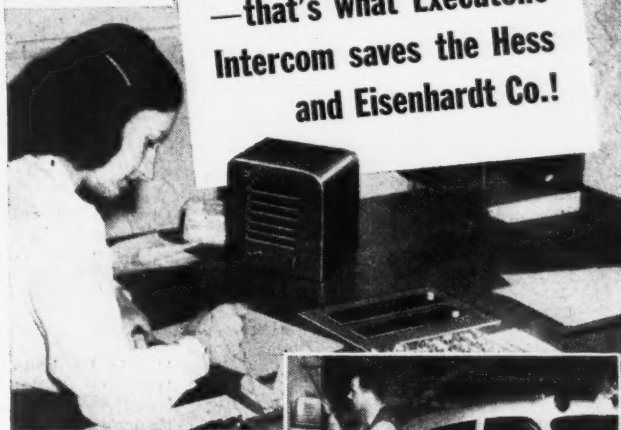
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AC Spark Plug Div.	14-114-115
AP Parts Corp.	112-113
Air Express Div., Railway Ex- press Agency	130
Ajax Auto Parts Co.	119
Allen Electric & Equipment Co.	197
American Chain & Cable Co.	97
American Hammered Piston Rings	Back Cover
Andrews Mfg. Co.	186
Armstrong-Victor	73
Aro Equipment Corp.	148
Associated Business Papers	194
Atlas Press Co.	132
Auburn Clutch Co.	163
Austin Motor Co. Ltd., The	110
Auto-Lite	10-11-22-23
Auto Specialties Mfg. Co.	146-147
Automotive Mfg. Co., Inc.	185
Autopulse Corp.	140

Index to Advertisers

This Advertisers' Index is published as a convenience, and not as part of the advertising contract. Every care will be taken to index correctly. No allowance will be made for errors or failure to insert.



BMC Mfg. Corp.	192
Barrett Equipment Co.	159
Barton Products Co.	184
Bean Div. of Food Machinery & Chemical Corp., John	195
Bear Manufacturing Co.	153
Bendix Products Div.	99
Black & Decker Mfg. Co.	95
Blackhawk Mfg. Co.	18-19-152
Bostrom Mfg. Co.	186
Bowes "Seal Fast" Corp.	120
Buell Manufacturing Co.	104
Burd Piston Ring Co.	82
Butler Mfg. Co.	111

Cal-Van Machine Products, Inc.	184
Champ-Items, Inc.	156
Choldun Manufacturing Corp.	25
Chrysler Corp.	5-117-127-190
Classified Advertisements	142
Cleveland Pneumatic Tool Co.	80
Clinton Products Co.	183
Coats Iron Tireman	180
Cole-Hersee Co.	186
Commercial Credit Corp.	191
Commercial Solvents Corp.	133
Crescent Company, Inc., The	24
Curtis Pneumatic Machinery Div. Curtis Mfg. Co.	189

D & C Sales Co.	199
Davison Chemical Corp., The	166
Dayton Rubber Co.	124-125
Delco-Remy Div.	7
DelMar Motors Inc.	170
De Luxe Products Corp.	173
De Soto Div. Chrysler Corp.	190
Detrex Corporation	184
Dodge Div. Chrysler Corp.	81
Dorman Products, Inc.	94
Du Pont Zerone and Zerex	161
Durabake, Inc.	192
Durkee-Atwood Co.	186

Eis Automotive Corp.	126
Electric Auto-Lite Co.	10-11-22-23-69
Electric Storage Battery Co.	121
Everhot Products Co.	118
Executone, Inc.	199

Federal Identification Co.	142
Federal-Mogul Service	32-128
Federated Metals Div.	199
Felt Products Mfg. Co.	155
Fitzgerald Mfg. Co., The	131
Ford Motor Co.	16-17
Fram Corporation	77
Frenchtown Porcelain Co.	186
Fulton Company, The	116

General Motors Corp.	13
Grey-Rock Div. Raybestos-Man- hattan Inc.	9
Grote Mfg. Co., Inc.	184
Guide Lamp Division	187

Harris Products Co.	150-151
Harrison Radiator Div.	15
Hastings Mfg. Co.	2nd Cover
Hausman Mfg. & Sales Co.	184
Heller Brothers Co.	122
Hennessy Sales Co., Jack P.	180
Homestead Valve Mfg. Co.	102
Hotel Wolverine	184
Hulbert Manufacturing Co.	168
Hull Mfg. Co.	199
Hygrade Products Division	188
Hyland Manufacturing Co.	186

Imperial Brass Mfg. Co.	108
Independent Pneumatic Tool Co.	145
International Chain & Mfg. Co.	184

Johnson Bronze Co.	72
--------------------	----

K-D Mfg. Co.	193
Kelite Products, Inc.	185
Kelsey-Hayes Wheel Co.	143
Ken Tool Mfg. Co., The	186
Kennedy Machine Co.	193
Kester Solder Co.	93
King Quality	71
Koppers Co., Inc., Piston Ring Div.	Back Cover

Lempco Products, Inc.	157
Libbey-Owens-Ford Glass Co.	174
Lion Auto Parts & Mfg. Co., Inc.	154
Lion Oil Co.	158
Littelfuse, Inc.	76
Lynn Products Co.	183
Lyon, Inc.	164-165

McQuay-Norris Mfg. Co.	100-101
Magnus Chemical Co.	138
Manley Div., Amer. Chain & Cable Co.	97
Meiser & Co., G. H.	171
Mid-Continent Petroleum Corp.	183
Milwaukee Electric Tool Corp.	177
Monmouth Products Co.	105
Moog Piston Ring Co.	6
Moraine Products Division	123-201
Motor Age	196

National Machine & Tool Co., Inc.	96
National Machine Works, Inc.	84
New Britain Machine Co.	162
Niehoff & Co., C. E.	192
North American Electric Lamp Co.	199

Packard Electric Div.	83
Pedrick Piston Rings	8
Pennsylvania Lacquer Center	180
Pennsylvania Refining Co.	184
Pennzoil Co., The	98
Perfection Gear Co.	198
Permatex Co., Inc.	1
Polk & Co., R. L.	198
Prest-O-Lite Battery Co., Inc.	21
Puritan Company Inc.	78
Purolator Products, Inc.	149

Radiator Specialty Co.	144
Ramsey Corporation	3rd Cover
Raybestos Div., Raybestos-Man- hattan, Inc.	4

Saginaw Steering Gear Div.	139
Sealed Power Corp.	30-31
Service Spring Co.	184
Service Supply Company	74
Simoniz Company, The	175
Sitka Spruce Lumber & Mfg. Co.	182
Skillsaw, Inc.	169
Snap-on Tools Corp.	129
Socony-Vacuum Oil Co., Inc.	12
Southern Friction Materials Co.	186
Springfield Electrical Specialties, Inc.	198
Standard-Thomson Corp.	202
Sterling Tool Products Co.	75
Studebaker Corp.	67
Supco Products Corp.	182
Susquehanna Mills, Inc.	109

Texas Company, The	2
Thermold Company	106-107
Timken Roller Bearing Co., The	179
Trico Products Corp.	137
Tsungani Piston Co.	180
Tuthill Spring Co.	185

U. S. Axle Co., Inc.	136
U. S. Industrial Chemicals, Inc.	28-29
United Motors Service Div. Gen- eral Motors Corp.	79
United States Electrical Tool Co., The	186

Van Bergen & Greener, Inc.	186
Victor Mfg. & Gasket Co.	73

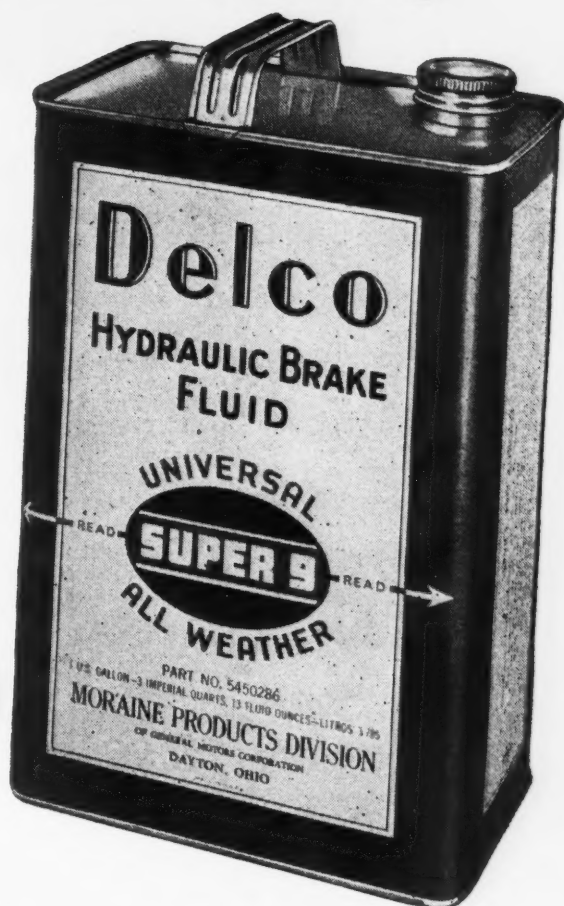
Wagner Electric Corp.	172
Walker Manufacturing Co.	26-27-134-135-160
Wausau Motor Parts Co.	181
Wayne Pump Co., The	20
Weatherhead Co., The	103
Wells Mfg. Corporation	184
Wilkening Mfg. Co.	8
Willard Storage Battery Co.	85-86-87-88-89-90-91-92
Wiry Joe	24
Wolf & Co., Ltd., S.	180
Wolf's Head Oil Refining Co.	186
Wood Co., Frank N.	141

Zecol, Inc.	184
Zink Corp., The Howard	167

SAFETY KNOWS NO SEASON

DELCO SUPER 9 HYDRAULIC BRAKE FLUID

***Keeps brakes (and profits)
on the safe side—
in all seasons***

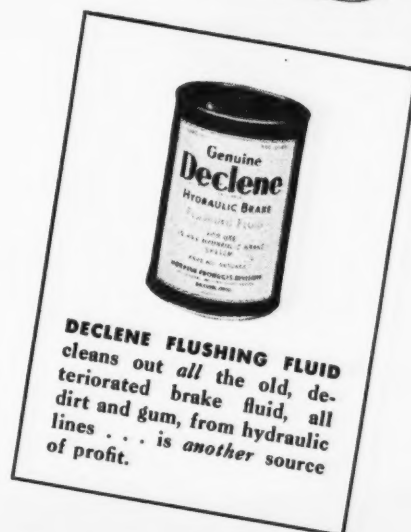


You can help promote safety, and win a lot of good will, by selling customers on *safety-fying* their hydraulic brake system with a refill of Delco Super 9 brake fluid.

This special-formula brake fluid is both long lasting and long *ranging*—it is effective over a temperature range from 50 degrees below zero to 300 degrees above. It is non-gumming, also non-harmful to metal and rubber parts.

Right now is a good time to talk brake system refills . . . right now is a good time to step up your sales of Delco Super 9. Call your United Motors distributor.

DELCO BRAKE—A UNITED MOTORS LINE
Available Everywhere Through
UNITED MOTORS DISTRIBUTORS

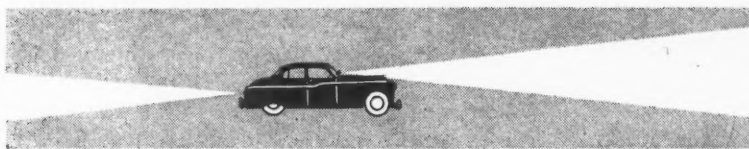


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Delco

SUPER 9 AND SUPER 11 BRAKE FLUID • DECLENE • BRAKE PARTS
STANDARD FOR EQUIPMENT • THE STANDARD FOR REPLACEMENT

now...*Safety and Convenience*



IN EITHER DIRECTION



MODEL 15A

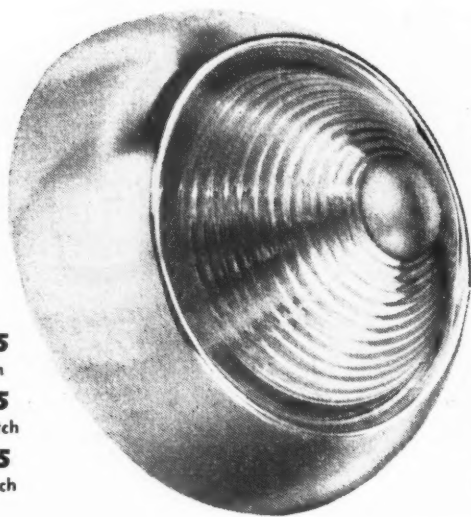
5-inch head

MODEL 32A

6-inch head

Thomson *Pistol Grip* **Spotlight**

Modern design, precision construction, new close-to-body mounting. Built-in finger-tip control, full 360° rotation, sealed beam bulb. Fits all cars, right and left hand models.



MODEL 455

Pair, with switch

MODEL 355

Single, with switch

MODEL 055

Single, less switch

Thomson *Flush-Mounted* **Back-up Light**

Completely new design permits flush mounting, creates appearance of original equipment. Provides widespread beam of light, operates automatically upon shifting to reverse gear. Switch included with automatic models.

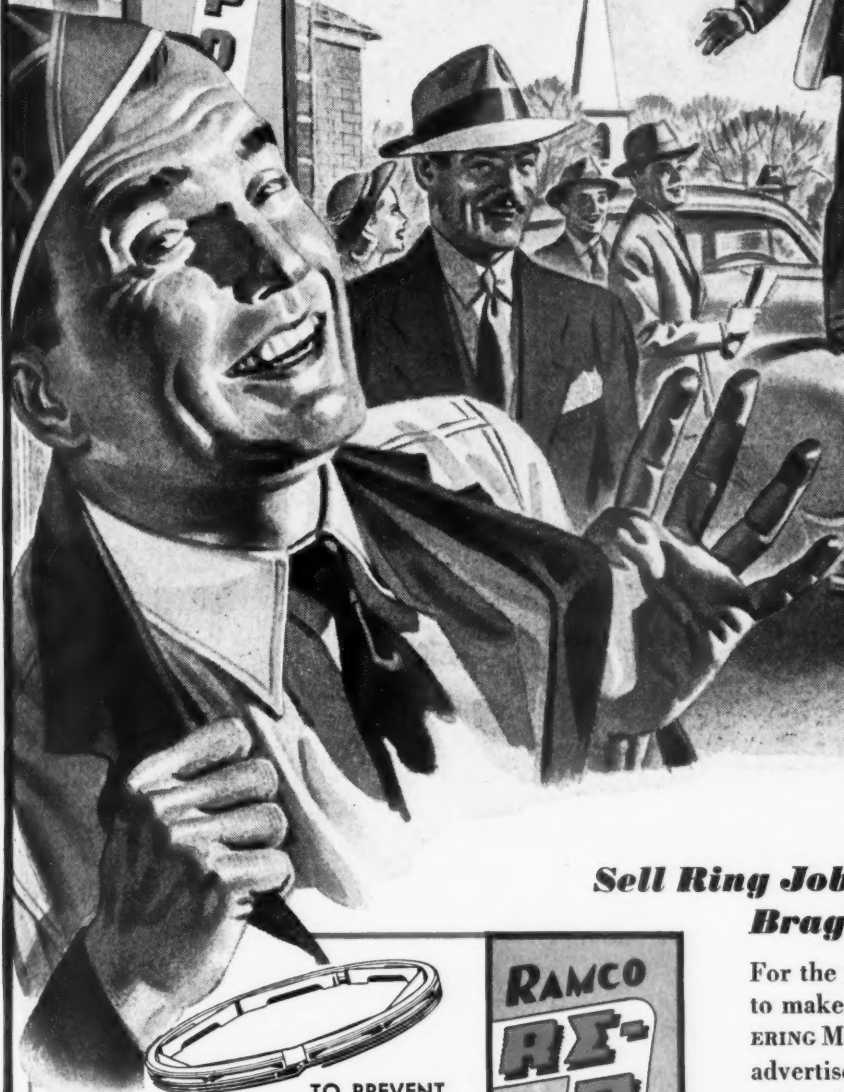
Thomson
Pistol-Grip SPOTLIGHTS
and BACK-UP LIGHTS

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STANDARD-THOMSON CORPORATION

216 S. MAIN ST. • DAYTON 2, OHIO

*How to Get EXTRA Business Today
and 2 Years from Now!*



**Sell Ring Jobs Your Customers Will
Bray About 2 Years From Now!**

For the kind of ring jobs that customers will want to make speeches about... adopt the RAMCO RE-POWERING Method. Use Ramco 10-Up Rings, as nationally advertised in **POST** and **COLLIER'S**. This combination is sure to make more lasting friends for you. Because this combination relies on PISTON STABILIZATION... not excessive wall pressures... to control oil and blow-by. Not only does this mean smoother, peppier engines but LESS WEAR!

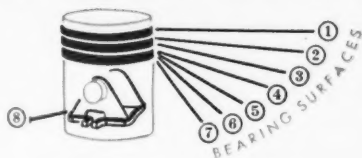
FOR RE-BORE OR RE-RING—CAR OR TRUCK

**RE-POWER WITH RAMCO 10^{up}
PISTON RINGS**

Built to EXCEED the 10,000 MILE (ONE YEAR) GUARANTEE BY THOUSANDS OF MILES

Other products of Ramsey Corporation, 3718 Forest Park Blvd., St. Louis 8, Missouri, RAMCO Piston Skirt Stabilizers... Seal-Tite Piston Rings... Oil-Tyte Piston Rings... Spirolax Retaining Rings, Spiro-Seal Grease Seals & Dust Seals... Famous RAMCONizer Machine for reshaping collapsed piston skirts... Ramco 3-Up Parts Cleaner. Factories: St. Louis and Sullivan, Mo.; Fruitport, Mich.; Toronto 8, Ont., Canada. Copyright 1949 by Ramsey Corporation. R-3150

TO PREVENT
WEAR AND PISTON KNOCK,
RAMCO STABILIZES THE PISTON...



① ② ③ ④ ⑤ ⑥ ⑦ are BEARING SURFACES.
④ and ⑤ are TWO-EDGES of an actual CAST-IRON
OIL RING (not a spacer). ③ ⑥ and ⑦ are TRIPLE-
STEEL CONTACTS! INDEPENDENT of INNER RING
during initial period. ⑧ is the RAMCO PISTON
STABILIZER... applies correctional force at
RIGHT ANGLES TO WRIST PIN!

It all adds up to LONGER LIFE. Ask your RAMCO
Jobber Salesman for details... and circular!
Find out why RAMCO

"Makes More Lasting Friends"

**RAMCO
RE-
POWERING
STATION**

KOPPERS K-SPUN

Piston Rings

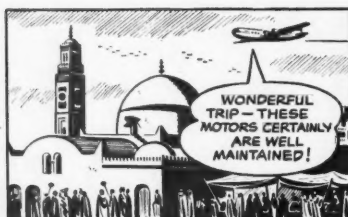
"Power" the new Pan American 350 mph.
STRATOCRUISERS

*Around the World
in 171 Hours!*

PALACE IN THE SKY.
THE NEW MILLION
AND A HALF DOLLAR
PAN AMERICAN
AIRWAYS CLIPPER.



THE ALPS — HIGHEST MOUNTAINS
IN EUROPE.



ISTANBUL — CROSSROADS OF
THE WORLD.



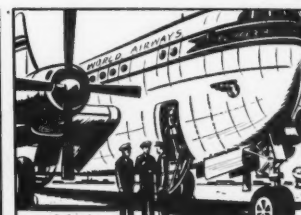
WE'RE OFF — ON OUR FLIGHT
AROUND THE WORLD!



THE NAVIGATORS HORROR — FOG —
HAS CLOSED IN THE GANDER AIR-
PORT BUT PAN AMERICAN'S RADAR
LANDING SYSTEM BRINGS THE
PLANE IN SAFELY.

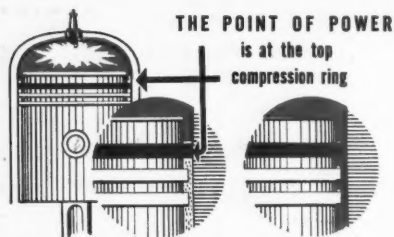


HAWAII — SURFBOARDS — TROPIC MOON-
LIGHT — JUST A FEW HOURS FROM THE
STATES ON PAN AMERICAN CLIPPERS!



HOME AGAIN — A PERFECT
TRIP — ANOTHER TRIUMPH
FOR KOPPERS K-SPUN
PISTON RINGS.

(One of a series of advertisements appearing in The Saturday Evening Post)



K-Spun compression rings
keep flame in combustion
chamber . . . keep oil out.
Guaranteed against break-
age; 50% more "spring";
four times stronger. Result: top
power, gas and oil savings.

When compression ring fails
to make an explosion-proof
seal, flame "blows-by," wast-
ing power and burning oil.
But worse than that, causes
excessive scuffing and dam-
aging wear.

AND YOU CAN PUT THEM IN CARS AND TRUCKS

Yes, the greatest advance in
piston ring engineering—
adopted by those who have
the tough jobs in transporta-
tion—is now available to help
you make more piston ring
profits and cut down come-
backs!

Study the chart here. See why
those whose business is trans-
portation demand the definite
superiorities of Koppers

American Hammered K-Spun
Piston Rings.

You'll do better jobs, make
better-satisfied customers and
more profits if you stock and
recommend these better pis-
ton rings . . . proved by per-
formance. Write today for full
details.

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American Hammered

KOPPERS PISTON RINGS